



VOLUME 01, DEC 2025

# CATALYST

IGNITING CURiosity, ACCELERATING DISCOVERY

## The Poisoner's Paradox: When Chemistry Becomes the Weapon

*Snr. Prof. Vajira P. Bulugahapitiya*

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It is with immense pleasure and excitement that we present the inaugural edition of the Chemical Society Magazine, CATALYST, a platform dedicated to celebrating and exploring the vibrant world of Chemistry at the University of Ruhuna.

## Our Vision

In a world increasingly shaped by scientific discovery, Chemistry stands as one of the fundamental disciplines, which is the very language of matter. From the complex processes within living cells to the synthesis of novel materials and the drive towards sustainable energy solutions, the impact of Chemistry is pervasive and undeniable. This magazine is envisioned as a crucible for ideas—a place where students, academics, and enthusiasts can share their research findings, discuss cutting-edge technologies, delve into the history of chemical milestones, and reflect on the ethical and environmental responsibilities of modern chemists.

## What We Offer

Within these pages, you will find a diverse array of content: captivating articles on recent breakthroughs in fields like Medicinal Chemistry and Green Chemistry; insightful interviews with distinguished faculty members and alumni; reports on the society's activities, including seminars and outreach programs; and, most importantly, space for student-contributed work, showcasing the exceptional talent and intellectual curiosity present within the Department of Chemistry.

## Engage with Us

This publication is a testament to the collective passion for Chemistry at the University of Ruhuna. We encourage every reader to engage with the content, submit your own articles and perspectives, and view this magazine not merely as a periodical, but as a growing archive of intellectual journey. The future of Chemistry can be brightened with the innovative minds.

We hope this inaugural edition of the CATALYST magazine sparks your curiosity and inspires you to look closer at the world around you—a world intricately built from molecules and their incredible transformations.

**Happy Reading!**

The Editorial Board, Chemical Society, University of Ruhuna.

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# Message from the Dean

It gives me great pleasure to extend my warm congratulations to the Chemical Society of the Faculty of Science for publishing the inaugural issue of the Chemical Society Magazine. This remarkable initiative provides an excellent platform for students and staff to share their knowledge, ideas, and creative expressions related to the field of Chemistry.

The first issue marks an important milestone and can serve as a foundation for continuous improvement in the years ahead. Publishing a magazine dedicated to Chemistry is of great significance, as it not only showcases the academic and research achievements of the department but also nurtures scientific curiosity and communication skills among students. Such publications serve as a bridge between theoretical learning and its practical and societal applications, inspiring readers to explore the diverse and evolving world of chemical sciences. The active participation of students is vital for sustaining and enhancing the quality of the magazine, while also helping them to develop essential communication, teamwork, and leadership skills that will benefit their future professional and academic growth.

I appreciate the dedication and enthusiasm of the editorial team and all contributors who made this publication possible. I wish the Chemical Society Magazine continued success in its future endeavours and hope it will continue to inspire excellence, creativity, and a lasting passion for Chemistry among our students.



**Prof. D.H.N. Munasinghe**  
**Dean**  
**Faculty of Science**  
**University of Ruhuna**



# Message from the Head of the Department

It is with great pleasure and a privilege to deliver this message to the first edition of the Chemical Society Magazine published by the Chemical Society, Faculty of Science, University of Ruhuna as the Patron of the Chemical Society and the Head of the Department of Chemistry.

Chemistry is the central science as it links with many other science subjects. In addition, it applies almost everywhere. As such, the Chemical Society has more opportunities to promote Chemistry as a subject as well as to disseminate the knowledge to other sectors fulfilling the gap addressing global challenges, as it is the ultimate goal of the society. This also enables students to enhance their soft skills such as organizing, leadership and teamwork.

This was a long-awaited task blossoming up this year to be a reality. I wish this would continue in future. I highly appreciate all who were involved in this, including the Senior Treasurer, Senior Editor, Vice President, and Junior Editor for their invaluable commitments. Further, I must thank all the committee members for their contribution for the events conducted throughout the year.

I wish all the best for future endeavours of the Chemical Society



**Prof. Chinthaka Sanath Gangabadage**  
Head of the Department  
Department of Chemistry  
Faculty of Science  
University of Ruhuna



# Message from the Senior Treasurer

It is a great pleasure to share this message for the inaugural edition of the Chemical Society Magazine of the Department of Chemistry, University of Ruhuna. This publication marks an important milestone in our society's journey, and I am honoured to have been part of turning this vision into reality.

During my tenure as the Senior Treasurer, one of my key aspirations was to create a platform that highlights the academic excellence, creativity, and diverse talents of our students. Seeing this magazine come to life is truly inspiring.

The Chemical Society has been actively engaged in academic and social initiatives that enrich student life and strengthen our community. I sincerely thank the editorial team and all contributors for their dedication in making this inaugural issue of the magazine a success.

I am confident that this magazine will continue to grow both in quality and impact, serving as an engaging platform to share updates, highlight achievements, and strengthen our community. I wish the Chemical Society continued success in all its future endeavours.



**Dr. Mahesh Kodikara**  
Senior Treasurer - Chemical Society  
Department of Chemistry  
Faculty of Science  
University of Ruhuna



# Introduction to CATALYST

*Igniting Curiosity, Accelerating Discovery*

Welcome to **CATALYST**, the inaugural magazine from the Chemical Society of the Faculty of Science, University of Ruhuna. For years, the vision of launching a platform to celebrate the dynamic world of Chemistry has been a passion of our student body, and we are thrilled to finally share our very first volume with you. This magazine is more than a publication; it is designed to be a true catalyst for engagement, learning, and discovery among all undergraduates in the Faculty of Science.

The primary objective of **CATALYST** is embodied in its tagline: '*Igniting Curiosity, Accelerating Discovery*'. We aim to serve as a bridge, connecting the fundamental concepts taught in lecture halls with the exciting realities of chemical research, industry, and daily life.

For every undergraduate, regardless of their major disciplines, this magazine is a resource to:

## 1. Spark Intellectual Curiosity

Encourage you to ask the big questions, look beyond your specific field of study, and explore the interconnectedness of science

## 2. Highlight Opportunities

Testimonials of Alumni providing a window into the diverse career paths available to science graduates

## 3. Demystify the Department

Make the Department of Chemistry more accessible and informative for prospective students and collaborators

Chemistry is often called the '**central science**' for a reason—it is fundamental to almost every discipline. Understanding Chemistry is not just about memorizing the periodic table or reaction mechanisms; it is about comprehending the material world, from the composition of a star to the structure of DNA.

The publication of **CATALYST** is a proud moment for the Chemical Society, as active student-lead initiative within the faculty. We are dedicated to enriching the academic life of our students by organizing events and fostering a community that goes beyond classroom learning. This magazine is the newest venture in our commitment to:

- ♦ **Promote Academic Excellence**

Showcasing success stories and recognizing Achievements

- ♦ **Build Connections**

Creating a valuable network among current students, Alumni, and faculty members

**CATALYST** is our contribution to a thriving scientific culture at the University of Ruhuna. We hope it fuels your passion and accelerates your journey of discovery.

# THE POISONER'S PARADOX:

## WHEN CHEMISTRY BECOMES THE WEAPON

### What is a Chemical Weapon or Chemical Warfare?

A 'Chemical Weapon' is a chemical used to cause intentional death or harm through its toxic properties. Chemical Weapons can be any toxic chemical (causes death to humans/animals), precursor to producing toxic chemicals and munitions or devices that can cause death or harm through release of toxic chemicals. Those are prohibited under Chemical Weapon Convention, (CWC). The use of Chemical Weapons has a long history. Chemical weapons were first used on a large-scale during World War I, causing an estimated 90,000 deaths and 1.3 million casualties. French used ethylbromoacetate, tear gas as a chemical weapon during World War-I and German used xylyl bromide as a chemical weapon in 1915.

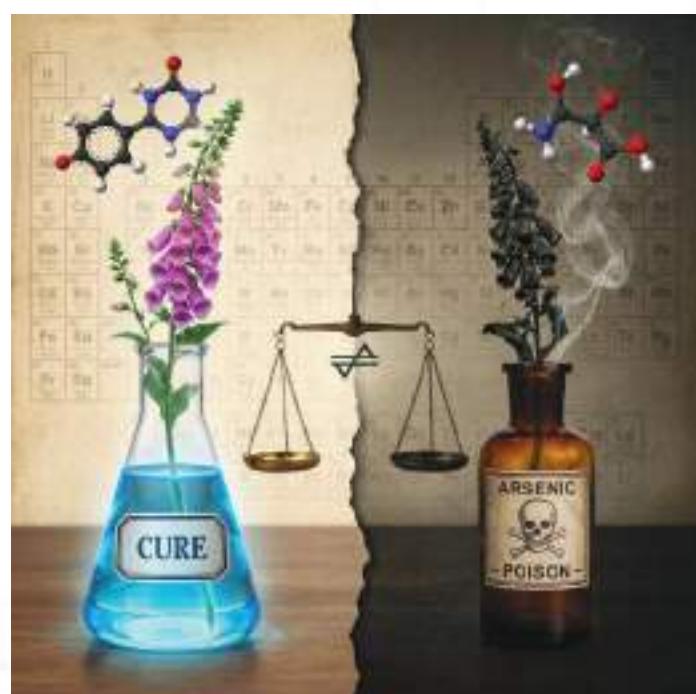
Fritz Jakob Haber, father of Chemical Warfare, was a German physical chemist who developed the Haber process to produce Ammonia, fertilizer, from atmospheric Nitrogen and Hydrogen. He was awarded the Nobel Prize in 1918 for his work in Ammonia synthesis. However, he applied his knowledge in Chemistry to produce Chlorine gas and other warfare chemicals for German Army during World war-I. Therefore, though his groundbreaking finding of synthetic fertilizer from Nitrogen and Hydrogen at higher temperature is credited as massive expansion of crop production and averting global food crisis, his work led to a controversial legacy, as his contribution in producing chemical warfare to kill thousands. The first large-scale Chlorine gas attack was done in the first battle of Ypres, Belgium in 1915 of World War-I. There were 5,700 cylinders of Cl<sub>2</sub> gas used and 5,000 casualties. F. A. Victor Grignard from French Chemist was the father of Grignard reagent and he won the Nobel prize for his discovery of Grignard reagent and Grignard reactions. However, he studied chemical warfare agents, particularly the manufacture of phosgene and the detection of mustard gas.

In World War-II, I. G. Farben developed the cyanide gas formulation Zyklon. Dr. Gerhard Schrader, Germany chemist is known as the father of the nerve agents. He hoped to make progress in the new pesticides, accidentally discovered nerve agents Sarin, Tabun, and Cyclosarin.

### Chemical Weapon Convention (CWC)

The Chemical Weapons Convention (CWC) is an international arms control treaty that prohibits the development, production, stockpiling, and use of chemical weapons. According to CWC, the following were totally prohibited in 1993.

- ◆ To develop, produce, otherwise acquire, stockpile or retain chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone
- ◆ To use chemical weapons
- ◆ To engage in any military preparations to use chemical weapons
- ◆ To assist, encourage or induce, in any way, anyone to engage in any activity prohibited to a State Party under this Convention



It is overseen by the Organization for the Prohibition of Chemical Weapons (OPCW) located in the Netherlands. OPCW is the implementing body of CWC and requires the member states to destroy any chemical weapons and related facilities.

### Chemistry and Health Hazards of Chemical Weapons

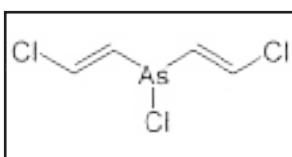
The chemistry of chemical weapons varies. However, all of them cause significant health hazards by damaging the nervous system (nerve agents), lungs (choking agents) and skin or eye (blister agents). OPCW has categorized 'Warfare Chemicals' into three schedules: schedule-1, schedule-2 and schedule 3.

#### Schedule 1 Warfare Chemicals

Schedule-1 chemicals are known Chemical Weapon Agents (CWA). Those are highly toxic, closely related chemicals, or CWA precursors. Those have little or no peaceful applications and always made harmful effects

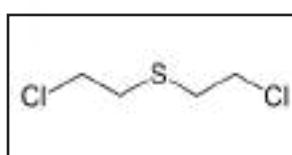
Examples: *sarin, soman, cyclosarin*

Those are organophosphorous esters and highly toxic nerve agents. Over stimulation created by those compounds lead to respiratory failure, convulsions, paralysis, and death within a minute to hour.



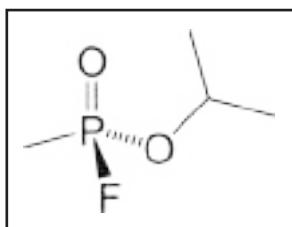
Lewisite

**Lewisite:**  $C_2H_2AsCl_3$ ; dichloro(2-chloroethyl)arsane is arsenic containing Chemical Warfare. It is a powerful irritant and blistering agent that immediately damages the skin, eyes, and respiratory (breathing) tract. As it contains arsenic, lewisite has some effects that are similar to arsenic poisoning, including stomach illness and low blood pressure. Lewisite is an oily, colourless liquid with an odour like geraniums



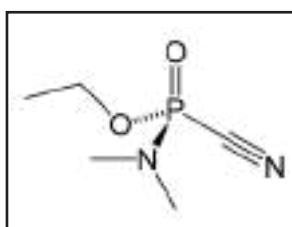
Mustard

**Mustard:**  $C_4H_8Cl_2S$ , IUPAC name Bis(2-chloroethyl) sulfideBis (2-chloroethyl) sulfide. Mustard gas or sulfur mustard, is a powerful chemical warfare agent known for causing severe skin, eye, and respiratory burns. Despite its name, it is an oily, odourless liquid at room temperature and is dispersed as a fine mist or vapour, rather than a true gas. Exposure can cause long-term health issues and has been used in several wars



Sarin

**Sarine:**  $C_4H_{10}FO_2P$ : Isopropyl methylphosphonofluoride is a phosphinic ester. It is the isopropyl ester of methylphosphonofluoridic acid. A colorless, odorless liquid. It shows almost no odour in its pure state. Sarine is absorbed into the body by inhalation, ingestion, skin contact, or eye contact. Soman and cyclosarin are in the same category as sarin.



Tabun

**Tabun:**  $C_5H_{11}N_2O_2P$ ; [dimethylamino(ethoxy)phosphoryl]formonitrile is a nerve agent and it acts as organophosphorus acetylcholinesterase inhibitors. Acute exposure to nerve agents can cause rapid death.

## Natural Toxic Compound in Schedule-1 Chemicals

Poisonous compounds are synthesized in nature by living organisms, for example by bacteria, fungi, terrestrial or marine animals. Toxic compounds, ricin from *Ricinus communis* (Castor oil compounds) and Saxitoxin from dinoflagellates are examples for natural toxins. Saxitoxin is a neurotoxic natural product. Ricin is highly toxic when it enters the body and it disables the ribosomes, which are essential for protein synthesis. Both have been weaponized and are included in Schedule 1 of the Chemical Weapon Convention (CWC).

## Schedule 2 Chemicals in Chemical Weapons:

These chemicals are toxic enough to be used as chemical warfare agents. These can be used as Precursors for making Schedule -1 chemicals. Schedule -2 chemicals have not been made in large commercial quantities for peaceful purposes. Toxic chemicals and precursors for schedule -1 chemicals are included in the schedule-2.

Example: Amiton: O, O-Diethyl S-[2-(diethylamino)ethyl] phosphorothiolate and PFIB:

1,1,3,3,3-Pentafluoro-2-(trifluoromethyl)-1-propene

Schedule-2 precursor molecules: Methylphosphonyl dichloride, Arsenic trichloride etc.

## Schedule 3 Chemicals in Chemical Weapons

These chemicals have been used as a Chemical Warfare Agent (CWA). The OPCW's Schedule 3 list includes toxic chemicals and precursors produced in large quantities for non-prohibited purposes, which are subject to declaration and verification.

Examples: Phosgene, Cyanogen chloride, Hydrogen cyanide, and Chloropicrin.

Precursors include phosphorus oxychloride, phosphorus trichloride, and thionyl chloride.

## Chemical Weapon Identification Method

Most commonly used analytical techniques are Gas Liquid Chromatography (GLC) and Gas Chromatography-Mass Spectrometry (GC-MS). Appropriate detectors are used for identifying N, S and P there in. OPCW Central Analytical Database (OCAD) is available for mainly CWC scheduled compounds. GC-MS data is compared with this database. The Automated Mass Spectral Deconvolution and Identification System (AMDIS) database is used in identifying Chemical Warfare Agents (CWA).

This article provides you with some understanding of Chemical Weapons, history of that, health hazardous and what are the scheduled chemicals, CWC, OPCW and identifying methods of warfare chemicals.



*Vajira P. Bulugahapitiya is a Senior Professor in Chemistry, Chair attached to the Department of Chemistry, University of Ruhuna, Sri Lanka. She has obtained her PhD from University of Fribourg, Switzerland in Organic Chemistry. She is a pioneering researcher in the field of Natural Product Chemistry and the most attended research work during past twenty years includes, exploration of Sri Lankan flora for discovery of novel biological active compounds, development of functional foods and nutraceuticals.*

**Vajira P. Bulugahapitiya**

**Senior Professor of Chemistry, Chair**

**Department of Chemistry**

**Faculty of Science**

**University of Ruhuna**

# DEPARTMENT OF CHEMISTRY

## Academic Staff



The vision of the department is to produce graduates with a sound knowledge in Chemistry having international recognition and the ability to fulfill chemistry based current needs of the country. Our academic programmes provide high quality Bachelor of Science (BSc) General and Honours Degrees and challenging learning opportunities in fundamental, advanced, practical, and applied Chemistry. Research facilities are also offered to students who are seeking postgraduate qualifications such as Master of Philosophy (MPhil) and Doctor of Philosophy (PhD) Degrees in Chemistry. The department is equipped with five elementary (teaching) laboratories with a total capacity of 240 to 300 undergraduates and two advanced laboratories for students reading for BSc Honours Degree and for postgraduate degrees in Chemistry. In addition, the department has a well-equipped special equipment room and also a computer room with Internet facilities. The computer facility is used for computer-assisted learning in Chemistry. The department offers several optional course units with an objective to enhance the employability of Chemistry graduates of University of Ruhuna.

## Non-Academic Staff



# Degree Programmes

## Bachelor of Science (BSc)

The Department of Chemistry offers Chemistry as a subject in BSc General (3-year) and BSc Honours (4-year) degrees. These are full time courses consisting of a number of course units organised as two semesters per academic year.

The General Degree Programmes run through six semesters, while the Honours Degree Programmes run through eight semesters. Examinations and evaluations are held throughout each semester. In completion of BSc General Degree of SLQF level 5, students must earn a minimum of 90 credits and for a BSc Honours Degree of SLQF level 6, students must earn a minimum of 120 credits.

The Department of Chemistry announces the number of students to be enrolled into the Honours Degree programme depending on its requirements, and the physical and human resources available at the beginning of the Semester II of every academic year. The selection of a student shall be determined by the department based on the performance of the student in the selected subject of specialization at Level I and Level II of the General Degree Examinations.



## Master of Science (MSc)

Master of Science in Analytical Chemistry is a comprehensive two-year degree programme designed to provide advanced knowledge and hands-on experience in Analytical Chemistry and instrumental techniques beneficial to industries and institutes engaged in chemical analysis.

### Eligibility Requirements:

- ♦ **Bachelor's Degree in Science with Chemistry (SLQF Level 5 or 6)**
- ♦ **Bachelor's Degree in any other fields:**  
Agriculture, Allied Health Sciences, Applied Sciences (SLQF Level 5 or 6)

### Course Details:

- ♦ Duration: 2 Years
- ♦ Medium: English
- ♦ Weekend Programme
- ♦ Venue: Department of Chemistry
- ♦ SLQF: Level 9 and 10
- ♦ Course Fee: Rs. 350,000.00

### Course Structure:

The programme is based on coursework for the first two semesters followed by coursework and research project (18 credits) which spans over third and fourth semesters. The coursework consists of lectures, practical classes, tutorials, seminars, case studies, and field visits.

The details of the programme and the application process are available at



For More Details:

**Dr. Kumudu Siriwardana**  
Programme Coordinator  
Department of Chemistry  
Faculty of Science - University of Ruhuna  
Email: [wkkdsiriwardana@chem.ruh.ac.lk](mailto:wkkdsiriwardana@chem.ruh.ac.lk)  
Contact: +94 76 548 3806

# Research Laboratories and Instrumentation Facilities at the Department of Chemistry

The Department of Chemistry at the Faculty of Science, University of Ruhuna, stands as a beacon of scientific advancement in the Southern Province of Sri Lanka. As the only chemistry-based research facility in the region, the department plays a vital role in fostering innovation, supporting higher education, and contributing to the country's growing scientific and industrial landscape.

The department operates two well-equipped research laboratories; one dedicated to undergraduate research and another designed for postgraduate studies. Both laboratories are furnished with instruments and infrastructure, providing students and researchers with the resources required to carry out high-quality experimental work. These facilities support a wide spectrum of research activities under BSc, MSc, MPhil, and PhD programmes, covering fields such as Analytical Chemistry, Natural Products, Polymer Chemistry, and Environmental Science.

At the heart of these facilities lies the Instrumentation Laboratory, which serves as the central hub for advanced analytical research within the department. This laboratory is equipped with a range of instruments that enable detailed chemical characterization, quality control, and applied studies with relevance to both academia and industry.



Among the most vital instruments are two Gas Chromatographs equipped with flame ionization

detectors, which are indispensable for analyzing volatile and semi-volatile compounds. These instruments are widely used in environmental monitoring, food chemistry, and fragrance formulation. Their precision and reproducibility make them essential for both research and industrial quality assurance processes.

The High-Performance Liquid Chromatograph (HPLC) – analytical and semi-preparative, fitted with both a Diode Array Detector (DAD) and a Refractive Index Detector (RID), provides powerful capabilities for separating and identifying non-volatile and thermally unstable compounds. It is particularly valuable in pharmaceutical and natural product chemistry, where accurate quantification and purity assessment are critical. This system supports research in drug development, nutraceutical analysis, and polymer characterization.



Another essential tool is the Fourier Transform Infrared (FTIR) Spectrometer with an Attenuated Total Reflectance (ATR) accessory. This instrument enables the identification of molecular structures and functional groups in organic and inorganic substances. Its broad applicability across polymer, materials, biological, and environmental sciences makes it one of the most versatile and widely used techniques in modern chemical research.



The department's Freeze Dryer plays a crucial role in preserving thermolabile compounds by removing moisture through sublimation under low temperatures. This equipment is invaluable for preparing plant extracts, stabilizing pharmaceutical formulations, and preserving biological materials without compromising their chemical integrity.



Complementing these capabilities is a Double Beam UV–Visible Spectrophotometer, a fundamental instrument for both teaching and research. It allows for precise quantitative and qualitative analyses of compounds in solution, enabling researchers to determine concentrations, monitor reaction kinetics, and study absorption characteristics of chemical species. Its applications extend across environmental monitoring, biochemistry, and materials science.

In combination, these instruments significantly strengthen the department's analytical and research capabilities while providing students with essential practical training in advanced instrumentation techniques that are highly regarded in both scientific and industrial research environments.

Looking to the future, our vision is expanding instrumentation laboratory into a 'Regional Center' of excellence that serves both academic and industrial stakeholders. Plans are underway to open the laboratory's services to external researchers and industries across the Southern Province. The goal is to establish the facility as the first accredited analytical service laboratory in the Southern Province, and to position it as a leading 'Center for Chemical Research and Analysis' in Sri Lanka.

Through these strategic initiatives, we continue to consolidate its role as a 'Center of Scientific Innovation' and excellence, fostering rigorous research, advanced chemical education, and productive collaborations between academia and industry, thereby contributing significantly to the advancement of chemical sciences within the region and beyond.



**Dr Sujeewa Lamahewage**  
**Senior Lecturer - in-Charge of the Instrumentation Laboratory**  
**Department of Chemistry**  
**University of Ruhuna**

# The CHEMICAL Society

The Chemical Society of the Faculty of Science, University of Ruhuna, is the crucible for scientific engagement and student development among undergraduates. It functions as a dynamic platform committed to the holistic growth of its members, consistently prioritizing academic and research excellence, career and professional development, and community and social engagement.

## Our Mission

The society's mission is to facilitate and promote:

- ♦ The advancement, appreciation, and understanding of Chemistry within the university.
- ♦ Interpersonal relationships among university undergraduates, the academic community, and students from other universities.
- ♦ Disseminating knowledge and promoting chemistry-related activities among schools in the Southern Province.

The society is brought into action by its office bearers, who are selected from student members studying Chemistry as a subject. These office bearers are elected at the Annual General Meeting.

## Key Activities and Achievements

The Chemical Society organizes a diverse range of activities that benefit its members both academically and professionally, and strengthen the community spirit.

- ♦ Academic and Research Engagement: Flagship events include Guest Talks that bring cutting-edge research from around the world to the lecture theatre.
- ♦ Career and Professional Development: The society actively guides students' career pathways, particularly for advanced studies abroad.
- ♦ Community and Social Involvement: Beyond academics, the society fosters a vibrant social atmosphere through its involvement in larger faculty events.

## Our Support System

The success of the Chemical Society is built on a foundation of strong support. We extend our sincere appreciation to the academic staff and the non-academic staff whose constant guidance and support strengthen the bond among all members of the department community. The dedication of our office bearers and the enthusiasm of all students are integral to successfully completing all projects and events. Special thanks go to alumni and guest speakers who share their global expertise, guiding our members towards innovation and professional growth.

The Chemical Society is a vital platform for students to become not only academically proficient but also globally aware and socially engaged, preparing them to be the future leaders and innovators in the chemical sciences.

# CHEMICAL SOCIETY

## Office Bearers 2024



**PATRON**  
Prof. Chinthaka Sanath  
Gangabadege



**SENIOR TREASURER**  
Dr M.S. Kodikara



**SENIOR EDITOR**  
Dr Chinthaka Nadun



**PRESIDENT**  
D.S.B.S. Kosgolla



**VICE PRESIDENT**  
T.G.Y.D. Silva



**SECRETARY**  
A.D. Kirindage



**JUNIOR TREASURER**  
B.M.M.D. Basnayaka



**JUNIOR EDITOR**  
R.H.V.C. Herath



**ASSISTANT SECRETARY**  
W.K.T. Fernando



**ASSISTANT SECRETARY**  
M.R.W. Godapitiya



**COMMITTEE MEMBER L-III**  
W.S.M. Karunaratne



**COMMITTEE MEMBER L-III**  
W.I.K. Meththananda



**COMMITTEE MEMBER L-II**  
D.M.A. Piyumsarane



**COMMITTEE MEMBER L-II**  
M.E. Rodrigo



**COMMITTEE MEMBER L-I**  
K.M.H. Kumaradasa



**COMMITTEE MEMBER L-I**  
S.H.S. De Silva

# A Retrospective on the Chemical Society's Journey

Four Years of Unparalleled Commitment to Academic Excellence, Global Career Readiness, and Community Building

The Chemical Society has long served as the crucible for scientific engagement and student development. A review of its activities from the past few years reveals a dynamic and holistic approach, consistently prioritizing three core pillars: deepening academic and research excellence, fostering career and professional development, and strengthening community and social engagement.

## Academic and Research Excellence

The society's flagship events, the guest talks, consistently bring cutting-edge research from around the world to the lecture theatre.

### 2024: Bridging Chemistry with Tomorrow's Technology

The most recent year's emphasis was on interdisciplinary science and real-world application. Members were privileged to host:

■ Prof. A.P. De Silva, from the School of Chemistry and Chemical Engineering, Queen's University, Belfast, Northern Ireland, delivered an insightful talk titled 'From Chemistry to Medical Diagnostics & Information Processing.' This session illuminated how core chemical principles drive innovation in diagnostic technology.

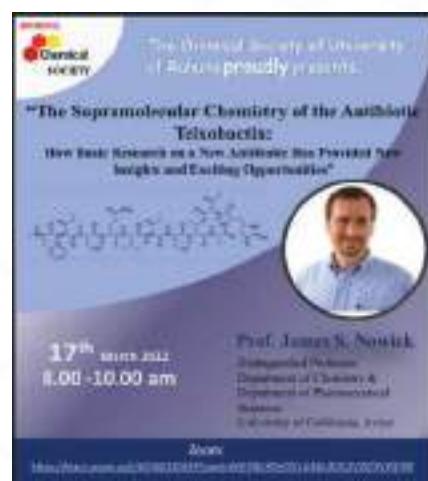


■ Prof. Stefan H. Bossmann, from the University of Kansas Medical Center, USA, discussed the 'Working Principles of Effective Nanomedicines.' His expertise offered a crucial look into advanced therapeutic concepts and the future of drug delivery, connecting fundamental Chemistry to cancer research.



### 2022: Deep Dive into Medicinal Chemistry

In 2022, the society hosted Prof. James S. Nowick, from the University of California, Irvine, USA. His session on 'The Supramolecular Chemistry of the Antibiotic Teixobactin' was a high-level discussion on complex Organic Chemistry and its pivotal role in developing new, much-needed antibiotics.



## Career and Professional Development

Recognizing the global aspirations of its students, the Chemical Society plays a significant role in guiding students for career pathways, especially for advanced studies abroad.

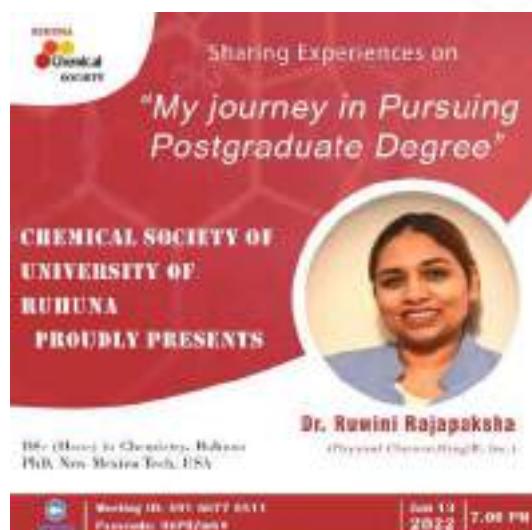
### 2023: The US Graduate Pathway

A key event in 2023 was the session led by Prof. Gomika Udugamasooriya, Associate Professor of Medicinal Chemistry, University of Houston, USA. His talk, 'Pathway for Successful Graduate Studies in US,' provided focused mentorship on navigating the rigorous process of securing admissions and succeeding in international graduate programme.



### 2022: Alumni Experience Sharing

The society leveraged its successful alumni network by inviting Dr. Ruwini Rajapaksha, a Physical Chemist, RingIR, Inc., USA, and a Ruhuna Chemistry alumni. Her personal account, 'My journey in Pursuing Postgraduate Degree,' offered relatable, first-hand advice and essential motivation for students considering advanced studies, proving that global success is well within reach.



## Community and Social Engagement

Beyond the demanding academic schedule, the Chemical Society is a consistent force for community spirit and recreation, primarily through its robust participation in the Science Faculty Day events.

2022: The Faculty Day 2022 saw the society host a highly popular Ice-cream Stall and the lively Bottle Ring Toss Game, successfully fostering a recreational environment for the entire faculty.



2021: The competitive spirit was channeled through the Faculty Day Quiz Competition, which acknowledged high-achieving finalists, Ridma Dilshan, Hansika Manawadu, Dileka Wijesinghe, and Bingun Sathsara promoting intellectual competition.



2020: Continuous strong involvement in the Science Faculty Day ensured the society played a supportive and visible role in larger faculty events, maintaining a vibrant social atmosphere

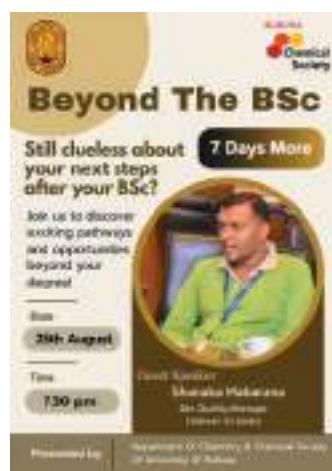


The Chemical Society's event calendar demonstrates a steadfast commitment to the holistic development of its members. The society continues to be a vital platform, ensuring that students are not only academically proficient but also globally aware and socially engaged, preparing them to be the future leaders and innovators in the chemical sciences.

# A Year in Review

The past year has been memorable and successful for the Chemical Society of the University of Ruhuna. With the constant support of the academic staff, the dedication of the office bearers, and the enthusiasm of all students, there were a series of meaningful projects and events that strengthened the unity and spirit of the society.

The first project for the year was 'Beyond the BSc,' a motivational programme organized for the outgoing third-year batch. Two of the alumni, Mr. Anjana Ranasingha, a PhD student at the University of Maine, USA, and Mr. Shanaka Mabarana, Site Quality Manager at Unilever Sri Lanka, joined as the guest speakers to share their experiences in academia and industry, helping students gain insight into their path after the graduation.



A Chemistry Seminar Programmes was organized for the General Degree - Level I and Level II students to support their academic progress and improve their performance. All sessions were successful and appreciated by the students.



To strengthen the financial base, the Chemical Society organized two fund-raising events, an 'Ice-cream Stall' and a 'Bottle Ring Toss Game' at the Faculty Day games 2024 and a soft drink stall at Ruhuna Undergraduate Science Symposium (RUSS) 2025. Both drew great participation and helped to generate funds for future projects. After earning a fair profit, the society offered free drinks and biscuits to students and participants of RUSS 2025 during the evening poster competition, which created a friendly and supportive atmosphere.



The Chemical Society also organized a Shramadhana campaign to clean the premises of the Department of Chemistry. Academic and non-academic staff, special degree and general degree students, and also the Dean of the Faculty of Science joined hands to make the event a success. It gave the department a fresh look and strengthened the bond among all members of the department community.



Soon after, the Chemical Society hosted a Guest Talk Session by a distinguished alumnus, Prof. Upul Wijayantha from Cranfield University, UK. His talk titled, '30 Years of Butterfly Journey in Clean Energy Research and What Next,' offered valuable insights into clean energy research and motivated both Chemistry and Physics students to think beyond traditional boundaries.



The biggest project of the year was distributing 325 lab coats to the first year students. It was not only a fundraising event but also a warm welcome to the department. Seeing them wear their first lab coat proudly marked the beginning of their Chemistry journey and showed the unity and spirit of the Chemical Society.



The most recent event was the 'Chemistry Undergraduate Poster Competition' held on 7th November 2025. It provided students with hands-on experience in academic poster preparation and presentation while encouraging general degree students to take part in inter-university competitions. The event was a great success with active participation and enthusiasm from all. The winners were offered a remarkable chance to present their poster at the Ruhuna International Undergraduate Science Symposium (RIUSS) 2025.



Looking ahead, the Chemical Society plans to continue this momentum and organize a Chemistry Quiz Competition in the upcoming year. Each achievement in this year reflects the teamwork, dedication, and creativity of the executive committee, strengthened by the support and guidance of the academic staff that made every event a success.

# ALUMNI CORNER

## Postgraduate Student List

Graduated Year	Student Name	University	Country
2019	Kalana Halanayake	Pennsylvania State University	USA
	Thilini Rathnaweera	Lowa State University	USA
	Dinethri Herath	University of Illinois, Chicago	USA
	Sujani Imaduwa	University of South Wales	UK
2020	Shakya Gunasena	University of Oklahoma	USA
	Nethmi Harindra	University of Alberta	Canada
	Kalani Samarasekara	University of Maine	USA
	Nishadi Nadeeshani	Ohio State University	USA
	Thilini Fernando	University of Wisconsin, Milwaukee	USA
	Kithmini Priyankara	Marquette University	USA
	Sandaruwani Fernando	Lowa State University	USA
	Chathumalee Manchanayake	Nottingham Trent University	UK
	Jayamini Ratnayaka	University of Arkansas	USA
2021	Budhdhima Pieris	University of Toledo, Ohio	USA
	Chamindi Perera	Marquette University	USA
	Duleeka Dissanayake	Indiana University Bloomington	USA
	Gihan Wickramasingha	Marquette University	USA
	Hashini Ishara	Nottingham Trent University	UK
	Nisaga Prathibhani Wanigasekara	Lowa State University	USA
	Romesh Perera	Indiana University Bloomington	USA
	Sandy Nilmini	Marquette University	USA
	Hashini Ekanayake	University of Illinois Chicago	USA
	Sachira Hewawardhana	Michigan State University	USA
	Saduni Ayeshani	Marquette University	USA
	Bhagya Samarakoon	University of Kensus	USA
	W.H. Ruwini Jaywaruni	Tulane University	USA
2022	M.H.T. Shiwanthi Anuradha	Wesleyan University	USA
	Vishwaka Thilakarathne	Wayne State University	USA
	Kanishka Madushan	Temple University	USA
	H.K. Ishan Deeraka Jayampathi	Marquette University	USA
	Osada Ranasinghe	University of Florida	USA
	Vibasha Samarasinghe	University of Florida	USA
	H.B. Mavini Keshala Kularathna	University of Arkansas	USA
	N.V. Methmini Dilhani	Miami University	USA
	Malka Kariyawasam	The University of Maine	USA
	Krishani Rajapaksha	Saint Louis University	USA
	Eranga Rupasighe	University of Kensus Medical Center	USA
	Teshani Jayasekara	Drexel University	USA
	Thilini Selvaraj	Tulane University	USA
2024	M.M.F. Shazeena	Miami University (Ohio)	USA
	Dilmini Abayawardana	Mississippi State University	USA
	Mohamed Safras	Texas Tech University	USA
	Udesha Keshani	University of New Mexico	USA
	Sanduni Imalka	University of South Dakota	USA
	Rashmi Premathilake	UiT The Arctic University	Norway
	Nimshi Rathnayake	UiT The Arctic University	Norway
	Chamodi Premasinghe	Grifith University	Australia
2025	Teesha Perera	The Ohio State University	USA

# From Ruhuna to the World Stage

## Alumni Narratives on International Doctoral Journeys



**Kalana Dasunpriya Halanayake**

**PhD Candidate**  
**Pennsylvania State University, USA**

My academic journey started at the University of Ruhuna in 2015, where I studied Chemistry. The Department of Chemistry provided a strong foundation and nurtured my curiosity and perseverance. Those years fueled my research passion and boosted my confidence to pursue higher academic goals.

While at Ruhuna, I was privileged to receive the Vice Chancellor's Gold Medal, Prof. R.H. Wijayanayake Gold Medal, and three consecutive Dean's Awards. These honours recognized both my academic achievements and my contributions to extracurricular activities. I still consider these awards among my most proud accomplishments, as they showcase not only my commitment but also the supportive environment that the Department of Chemistry has provided.

Today, I am pursuing my PhD in Chemistry at Pennsylvania State University, where my research focuses on the synthesis and characterization of inorganic nanomaterials. My work involves advanced techniques, such as Aberration-Corrected Scanning/Transmission Electron Microscopy (AC-S/TEM), Focused Ion Beam /Scanning Electron Microscopy

(FIB/SEM), and X-ray Diffraction (XRD), to investigate and probe materials at the atomic scale. The rigorous training and exposure I received at the Department of Chemistry, University of Ruhuna continued to guide me in tackling complex scientific questions.

Alongside my PhD studies, I work part-time as a staff member at the Materials Characterization Lab (MCL) within the Materials Research Institute (MRI) at Pennsylvania State University. In this role, I support various collaborative projects by training and assisting researchers with electron microscopy and FIB-related experiments. This dual experience—combining academic research with technical service—has expanded my perspective on science, teaching me the value of teamwork, problem-solving, and clear communication.

The journey has not been without challenges. Transitioning to a new research environment demanded adaptability, from learning to operate sophisticated instruments to developing effective scientific communication skills. However, the problem-solving mindset and resilience I built at Ruhuna enabled me to overcome these hurdles and grow as both a researcher and a professional. I remain deeply grateful to the Department of Chemistry at the University of Ruhuna for paving the path to my PhD. The mentorship, encouragement, and strong academic values I received there continued to shape my research career and inspired me to contribute back to the scientific community.




**Kalani Samarasekara**
**PhD Candidate**
**The University of Maine, USA**

My journey in Chemistry began in 2016 at the University of Ruhuna. I was selected for the Chemistry Special Degree in 2018. The experience was demanding, filled with lectures, practicals, assignments, presentations, exams, and research. Yet, as the saying goes, “It is pressure that bestows beauty on a diamond,” we were being moulded into young scientists. In 2020, I graduated with a BSc (Honours) Degree in Chemistry with a Second-Class Lower Division. For my final-year research project, I earned third place in the Inter-University Undergraduate Research Thesis Competition organized by SLAAS, and this work was later published as both a full research article and an abstract. Beyond academics, I also served as the Captain of the Chemistry Debate Team, leading our team to secure third place at the Inter-University Chemistry Debate Competition organized by the Institute of Chemistry Ceylon in 2020. Additionally, I was a member of the team that won first place in a Scientific Poster Competition organized by SLAAS in 2018.

After graduation, I worked as a Demonstrator in the Department of Chemistry, where I gained valuable teaching experience in undergraduate laboratory classes. Our professors consistently encouraged us to pursue higher studies abroad since day one. Motivated by their guidance, I prepared for graduate studies in the USA. After successfully completing TOEFL (114/120) and GRE, I applied to ten PhD programmes and received three offers. I ultimately chose the University of Maine, where I began my doctoral studies in 2022. Since then, I have completed my coursework with excellent grades and served as a Graduate Teaching Assistant, earning recognition as the Most Outstanding Graduate Teaching Assistant of 2023. I later transitioned to a Graduate Research Assistant position, focusing on my doctoral work. Currently, my research centers on peptoid/peptide synthesis, with a focus on their self-assembly into nanostructures for drug delivery applications. So far, I have published one review paper and presented three abstracts. In 2025 Summer, I conducted research at the Molecular Foundry of the Lawrence Berkeley National Laboratory in California, where I collaborated with leading experts and gained access to state-of-the-art instrumentation.

Now, as I begin my fourth year of doctoral studies, I continue to advance this research with the goal of completing my PhD soon. The lessons I learned at the Department of Chemistry, University of Ruhuna's have profoundly shaped my journey, and I remain deeply grateful for that foundation.





**Duleeka Dissanayake**  
PhD Candidate  
Indiana University Bloomington, USA

I am Duleeka Dissanayake, currently a PhD student in Inorganic Chemistry at Indiana University Bloomington, USA, in the Bloch research group. My research focuses on porous materials especially porous salts and optically transparent thin films for site-specific gas binding and optical sensing.

My journey began at the Department of Chemistry, University of Ruhuna, which gave me the strongest possible foundation. As an undergraduate, I carried out research in Organic Chemistry, a field that taught me patience, problem-solving, and the discipline of careful experimentation. At the same time, the department's breadth of training across Inorganic, Physical, and Analytical Chemistry sharpened my ability to connect concepts across disciplines. Those experiences became the steppingstones for the work I do today, where I integrate thin-film fabrication with spectroscopy (UV-Vis optical isotherms, XPS, PXRD, NMR) to probe adsorption energetics and site-specific interactions.

The transition to graduate school was not without challenges. Moving from one country to another meant adapting to a faster research culture, building confidence in scientific writing, and mastering advanced instrumentation. There were difficult days when experiments failed, and I questioned whether I was ready for this journey. What helped me through was the mindset I developed at Ruhuna: prepare

carefully, ask precise questions, and persist with resilience. The habits of keeping meticulous records, seeking feedback, and collaborating with peers' skills deeply rooted in my undergraduate training continued to guide me.



Looking back, I see a clear thread: the Department of Chemistry at University of Ruhuna opened the door and taught me how to walk through it. The department provided more than academic knowledge it taught me how to think like a scientist, lead with integrity, and care about the broader impact of my work. I am deeply grateful for the mentorship, facilities, and opportunities at Ruhuna, which not only nurtured my curiosity but also gave me the confidence to pursue a PhD abroad.





**Malka Induwara Kariyawasam**  
PhD Candidate  
The University of Maine, USA

Hold the ship's wheel until the storm passes!

From the inception of my undergraduate journey in the year 2017 at the Faculty of Science of the prestigious University of Ruhuna, I had a firm goal in mind to get selected to the Special Degree programme. After performing well in the academics in the first two years and facing well at the interview, I got selected to the Special Degree programme. Having been selected for the top 25 students from around 200 students who had enrolled in Chemistry during the first year, was a huge achievement for me and it laid the foundation for my higher education.

After jumping this hurdle, then came the most devastating setback in my undergraduate journey. Like a captain of a ship who cannot change the storm when the storm hits, there are certain periods in one's life that no matter how hard you want to change the circumstances, the circumstances will not change. The only thing the captain can do during those times is holding on to the ship's wheel. It is during those periods that we understand and define the true nature of our resilience. The period between third year and the first semester of my final year was a period where I completely lost my academic rhythm. At the end of 1st semester of my final year, I knew that there was no way I was going to complete my degree with a class. Then came the final semester, where we started our research. This was a moment of truth for me. I knew that the only chance of getting a Full Scholarship to pursue my PhD would be making a

greater impact by how well I perform my research. With full potential in me I was able to publish my research on 'Synthesis and Characterization of ZnO/Cu<sub>2</sub>O and Co co-doped Ag-ZnO/Cu<sub>2</sub>O Nanoparticles with Possible Photovoltaic Applications' as a full paper on SLIIT Journal of Humanities and Sciences.

To solidify my stance, I was recruited as a Scientific Assistant at the Nuclear Medicine Unit of the Faculty of Medicine of our University where I got the privilege to contribute to the National Newborn Screening Programme for Congenital Hypothyroidism. Today, I am a second year PhD student who is working collaboratively with the Department of Chemistry and Department of Chemical Engineering on Catalysis at one of the premier universities of the USA, The University of Maine.

Apart from my academics, I was able to secure inter faculty and inter-university achievements for University of Ruhuna in music, debating and public speaking of which I became the first undergraduate from University of Ruhuna to secure first place at a Inter University Public Speaking Competition. My heartfelt gratitude goes to my loving family who have been the power source of me, my school teachers from prestigious Richmond College, Galle and all the academic staff members of Department of Chemistry, especially my supervisor, Professor Jinasena Hewage who played a pivotal role in securing my PhD position. Also, I would like to extend my sincere gratitude to former Vice-Chancellor of University of Ruhuna, Senior Professor Sujeewa Amarasena for being a compass to me during a hard era I passed and to former Head of the Nuclear Medicine Unit, Senior Professor Manjula Hettiarachchi for giving immense support to me. Without all their advice and guidance, I wouldn't be in this position to share my experience with you all.





**Vibhasha Samarasinghe**  
PhD Candidate  
University of Florida, USA

“Gratitude to the place that shaped not only my career, but also the person I am today”

Pursuing my PhD has been both a challenging and rewarding journey, and I owe much of my foundation to the Department of Chemistry at the University of Ruhuna. My undergraduate studies at the University of Ruhuna nurtured my academic profile and gave me the confidence to dream bigger. Many might think that choosing a special degree means focusing solely on academics, but I was truly passionate about balancing both academics and extracurricular activities. Those experiences not only sharpened my personality but also helped me build a strong student profile that set me apart.

Thanks to the continuous encouragement of all lecturers, I applied for PhD positions in the USA and was lucky enough to secure a PhD position at a highly ranked University in the USA, University of Florida. The strong academic and research foundation I built at Ruhuna played a key role, enabling me to receive the Grinter Award for Best Recruiting Student in my intake. It allowed me to represent both my university and Sri Lanka with pride on the global stage.

Just as in my undergraduate years, I remain passionate about extracurricular activities at the University of Florida. Alongside my PhD studies, I run a YouTube channel, Happy Vibz, where I share my journey and inspire students in Sri Lanka and encourage them to dream bigger while carrying forward the values of University of Ruhuna.

Presenting my work at international conferences

always reminds me of my undergraduate days at Ruhuna, Department of Chemistry where I gained the confidence and communication skills that shape every talk I deliver. The Department of Chemistry served as a true platform of opportunity, preparing students to thrive in Sri Lanka and to compete proudly within the international scientific community.

Specially, the University of Ruhuna gave me not only education, it gave me my life partner. Osada and I, both as proud products of the Department of Chemistry, now pursue our PhDs together in Florida, carrying those memories and values with us every step of the way.

Finally, I am deeply grateful to the Head of the Department, my research advisors, mentors, and all lecturers who became lifelong friends to us, also to the non-academic staff. I encourage every student to take full advantage of the resources and opportunities in the Department of Chemistry to shape a successful path ahead.




**Fathima Shazeena**
**PhD Candidate**
**Miami University, Ohio, USA**

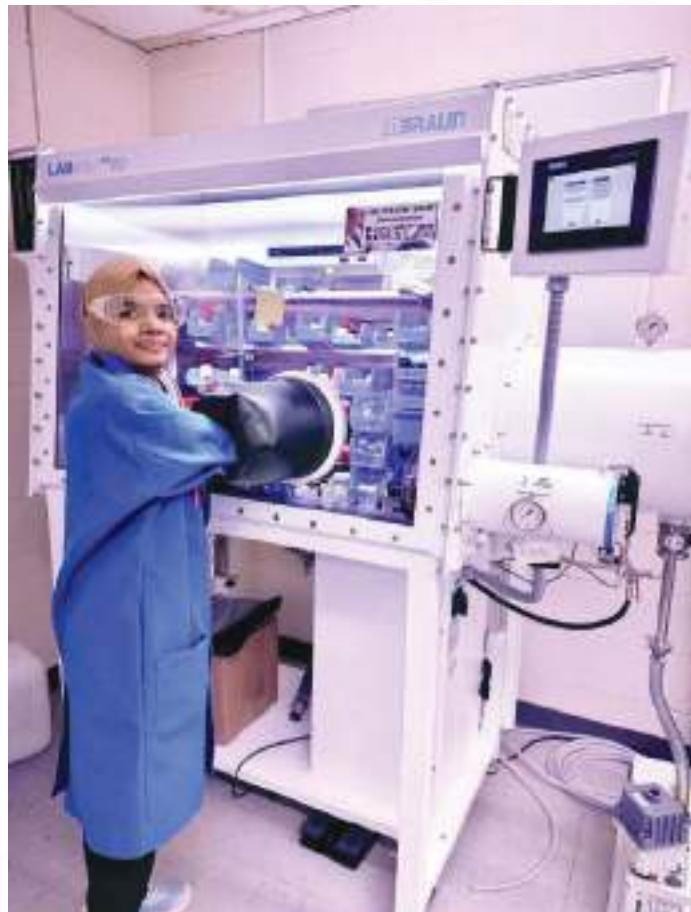
I am Fathima Shazeena, currently reading for my PhD in Chemistry at Miami University, Ohio, USA, where my research focuses on metal-organic frameworks and catalysis. I joined the university in Fall 2025, marking the beginning of one of the most exciting journeys of my life, a chance to dive deeply into the fascinating world of Chemistry.

Looking back at the path I began five years ago, I could never have imagined reaching this far. My story began when I was selected for the Bachelor of Science (BSc) Degree at the University of Ruhuna. At that time, I had only a vague idea of where my studies would lead. I still remember my very first lecture in the Department of Chemistry, University of Ruhuna. What I heard was, “If you are selected for the Chemistry Special Degree, you can reach your dreams and even pursue a PhD abroad.” Those words stayed with me and became my greatest motivation. Being selected for a Special Degree in Chemistry was a major milestone that changed my path. Whenever lecturers came to deliver their lectures, they reminded

us, “You all need to do a PhD — that’s why you are here; you have that potential.” I believe those words have been echoing through the Department of Chemistry in the past, present, and will continue to echo in the future, too. Their belief in us kept our ambitions alive.

Even when I faced challenges, especially the disappointment of initial PhD rejections, the unwavering support of my lecturers kept me strong. I am deeply grateful to all the lecturers of the Department of Chemistry, University of Ruhuna, who guided and inspired me. They taught me to place commas instead of full stops in my story, never to give up.

To my dear juniors, believe me, the Department of Chemistry, University of Ruhuna, is the right place, surrounded by incredible lecturers who will guide and uplift you. Make the most of this opportunity, spread your wings, and let the education and experiences you receive here lead you towards your dreams.



# Beyond the Lab Coat

Our Alumni's Transition to Corporate and Industrial Chemistry

**Dulaj De Silva**

Head of the Department-Water Laboratory  
Bureau Veritas



I am Dulaj De Silva, a proud graduate of the, Department of Chemistry, University of Ruhuna, where I earned a BSc (Honours) Degree in Chemistry (Second Class Lower Division Honors) in December 2022. After graduation, I served as a Temporary Teaching Assistant for 9 months, which helped me further develop my academic and leadership skills. On 6th of November, 2023, I joined Bureau Veritas as a Trainee Analyst, a role I earned based solely on my academic background and the skill set I cultivated during my university journey. I am deeply grateful to the academics at the University of Ruhuna who played a vital role in shaping my career. Under the guidance of Prof. Chinthaka and the dedicated faculty at the Department of Chemistry, I was trained to work under pressure and adopt a resilient approach to critical thinking and problem-solving. These qualities have been instrumental in my professional growth. After a year of committed work, I was honoured to be promoted to the position of the Head of the Department of the Water Laboratory, where I now oversee daily operations, analytical method development, and the strategic growth of the lab. The

*“Success is not just about reaching the destination, but about honouring the path that got you there.”*

leadership opportunities I embraced during university have empowered me to lead effectively in every scenario presented at Bureau Veritas. The technical excellence and resilience of Ruhuna graduates continue to shine here. Currently, nine individuals from our Chemistry Honours batch are thriving at Bureau Veritas:

Dulaj Ashen, Isuru Galage and Jayani Ranasingha  
*Department Heads*

Diliruskhi Sandamali  
*Chemist, Inorganic Instrument Laboratory*

Sanjana Sandamini and Dinushi Karunarathna  
*Analysts, Formaldehyde Laboratory*

Dileepa Sandaruwan, Raveesha Alahakon and Nethmi Hidellaarachchi  
*Analysts, RSL Organic Laboratory.*

Zahara Prena and Nimni Madara  
*Trainee Analysts, Water Laboratory*

Their hard work and the rigorous training received during the academic journey have made a lasting impact. I am proud to be part of this community and grateful for the foundation laid by the University of Ruhuna.



## Taniya Fernando

Quality Control Analyst

Astron Limited, Ratmalana

*“Learning gives creativity, creativity leads to thinking, thinking provides knowledge, and knowledge makes you great.” - Dr A.P.J. Abdul Kalam-*



These words perfectly reflect my own journey from the University of Ruhuna to my current role as a Quality Control Analyst at Astron Limited, Ratmalana. In my current role, I am responsible for the chemical analysis of raw materials and finished pharmaceutical products, ensuring they meet both quality and regulatory standards. Working in such a dynamic and quality-driven environment has allowed me to apply my academic knowledge to real-world industrial challenges while continuously expanding my knowledge and technical expertise.

A major turning point in my life began, when I was selected to follow the BSc degree at the University of Ruhuna and later to be specialized in Chemistry. My time at the University specially at the Department of Chemistry, played a pivotal role in shaping my career path. The strong foundation I received across all branches of Chemistry, along with hands-on laboratory experience, gave me the confidence to

handle advanced instruments and perform precise analytical testing with accuracy. Today, as I work extensively with HPLC instrument, I realize how far the knowledge that I acquired during my studies helps me to make my analyses successful. I enjoy every analysis I perform, seeing the beauty of Chemistry, which inspired me to explore the chemistry behind each and every chemical analysis. The confidence, curiosity, and critical thinking nurtured during my university years, along with the supportive academic environment and opportunities for independent research, later opened new doors for me where I was entrusted with critical analytical tasks and even involved in new method development. Every experience and challenge throughout my university life improved my soft skills, including problem-solving, communication, presentation, leadership, and teamwork, enabling me to collaborate confidently in a corporate environment.

Looking back, I truly believe that the knowledge, values, and experiences I gained at the University of Ruhuna continue to guide me every day in my professional journey and academic pursuits. I am deeply grateful to academic staff members of the Department of Chemistry, at the University of Ruhuna, for nourishing me with invaluable knowledge and skills.





**Dulaj Madhushankha**  
**Quality Assurance Executive**  
**Navesta Pharmaceuticals (Pvt.) Ltd.**

I am Dulaj Madhushankha, currently working as a Quality Assurance Executive at Navesta Pharmaceuticals (Pvt.) Ltd., with two years and six months of experience in the pharmaceutical industry. I studied Biological Science at the University of Ruhuna, which laid the foundation for my career in this vital and dynamic field.

As someone working in Pharmaceutical Manufacturing, I can say that this industry plays a crucial role in global healthcare by transforming chemical and biological substances into safe and effective medicines. The manufacturing process is highly regulated and science-driven, ensuring that every product delivered to patients meets strict standards for consistency, safety, and efficacy.

Typically, Pharmaceutical Manufacturing starts with pre-formulation and formulation development, where Active Pharmaceutical Ingredients (APIs) are combined with excipients to create the final dosage forms such as tablets, capsules, or injections. The production phase involves several carefully controlled steps including mixing, granulation, drying, compression, and coating, all tailored to the specific type of medicine being produced.

Maintaining product quality is paramount. To do this, manufacturers strictly follow Good Manufacturing Practices (GMP), an internationally recognized framework that ensures safety and quality. Our Quality Control (QC) teams continuously analyze raw materials, in-process samples, and finished products to detect any deviations. In addition, every process undergoes thorough validation and

documentation to guarantee traceability and reproducibility.

Environmental control is another key aspect, as clean rooms and advanced air filtration systems are used to minimize contamination risks and protect product integrity.

Professionals in this field come from diverse academic backgrounds including Pharmacy, Chemistry, Biochemistry, Biotechnology, and Chemical Engineering. Students who are interested in Pharmaceutical Manufacturing typically study Drug Chemistry, Microbiology, Pharmacology, Quality Assurance, Regulatory Affairs, and Manufacturing Technologies. Hands-on lab skills and a strong understanding of Standard Operating Procedures (SOPs) are essential to succeed.

With the global demand for safe and effective medications increasing, especially following the pandemic, the industry is actively seeking qualified graduates for roles in production, research and development, quality control, regulatory compliance, and beyond.

For students who are passionate about Science and Healthcare, Pharmaceutical Manufacturing offers a rewarding career. Gaining experience through internships, research projects, and industrial placements during university life can provide invaluable insights and open doors to exciting opportunities.

Whether formulating lifesaving antibiotics or developing innovative drug delivery systems, Pharmaceutical Manufacturing remains at the heart of medical progress.



# DEPARTMENT OF CHEMISTRY TRIUMPHS

## A CHRONICLE OF EXCELLENCE

The Department of Chemistry at the University of Ruhuna proudly celebrates the remarkable achievements of its students in various prestigious competitions, highlighting their dedication to research, knowledge, and innovation.

### 2021: Research and Quiz Success

**The year 2021 saw the department excel in the SLAAS Inter University competitions:**

First Place in the SLAAS Inter-University Poster Competition-2021 was secured by the Poster Team: Sanjana Sandamini, Vibhasha Pulsarie, Eranga Rupasinghe, Ruwini Jayawaruni, and Harshini Wickramarathne.



Third Place in the SLAAS Inter-University Quiz Competition-2021 was achieved by the Quiz Team: Kanishka Madushan, Ishan Deeraka, Chathura Samarasinghe, Shivanthi Anuradha, and Methmini Dilhani.



### 2022: Continued Success in Research and Quiz

The momentum continued into 2022, with students securing top places in the SLAAS Inter University competitions.

Third Place in the SLAAS Inter-University Quiz Competition-2022 was awarded to the Quiz Team: Ishan Jayampathi, Kanishka Madushan, Chathura Samarasinghe, Nimshi Rathnayake, and Sujeewa Dilmini.



Third Place in the SLAAS Inter-University Poster Competition-2022 was secured by the Poster Team: Vishwaka Thilakarathne, Malka Kariyawasam, Imalsha Perera, Methmini Dilhani, and Shiwanthi Anuradha.



## 2024: Champions in Innovation and Essay Writing

The department was crowned as the CHAMPIONS in the Inter-University Magic Competition-2024 organized by the College of Chemical Sciences – Institute of Chemistry Ceylon. The winning team members were Chamal Chinthaka, Deeksha Rodrigo, Taniya Fernando, Dilani Weerasinghe, and Pabodhi Perera.



Kavindi Anjana secured the ‘First Place’ at the Inter-University Essay Competition organized by the Women Chemists Committee (WCC) of the Institute of Chemistry Ceylon on the topic, ‘Role of Chemists in Green and Sustainable industries’.



## 2025: Groundbreaking Research Recognized

Starting the year 2025 on a high note, Anudi Kirindage achieved the ‘Third Place’ at the Inter-University Undergraduate Research Competition in Chemical Sciences 2025, organized by the Section E2 of SLAAS, for her work titled: ‘Computational Study of Nonlinear Optical Properties of Metal Alkynyl Complexes: Impact of Bridge Modification on First Hyperpolarizability’.



These accomplishments reflect the high quality of education and the vibrant research culture fostered by the Chemical Society and the Department of Chemistry at the University of Ruhuna.

These victories spanning research, quizzing, poster presentations, and innovative competitions are a testament not only to the hard work of our students but also to the unwavering dedication, expert guidance, and continuous support provided by the Department of Chemistry.

Deepest gratitude and sincere appreciation should be given to all the academic staff and non-academic staff of the Department of Chemistry, University of Ruhuna for their support and guidance that founded these outstanding achievements.

Thank you for the countless hours spent, advising projects, coaching teams, and empowering our students to reach their highest potential. Your efforts are invaluable and profoundly appreciated by the Chemical Society and the entire Department of Chemistry, at the University of Ruhuna.

## National Awards for Excellence in Agricultural Research 2023 and 2025

Senior Professor Vajira P. Bulugahapitiya and her team received the National Award, SLCARP Award for Excellence in Agricultural Research on October 23, 2025, at the BMICH.

Their award-winning project, “In-vivo Glycemic Index (GI), Proximate, Antioxidants and Heritability studies of traditional and improved Rice Varieties Cultivated in Sri Lanka,” analyzed 40 varieties. The study highlighted that improved varieties like At 362, Bg 300, and At 311 effectively balance productivity with nutraceutical and sensory benefits, supporting sustainable production and consumption. This research was done under a PhD study at the Department of Chemistry, collaboratively with Rice Research Station, Ambanlantota, funded by SLCARP.

The Research Team:

1. Snr. Prof. Vajira P. Bulugahapitiya (Principal Supervisor)
2. Prof. Eric De Zoysa (Co-supervisor)
3. Dr. Amita Bentota (Co-supervisor)
4. Ms. Roshni Hafeel (PhD Researcher)



## Presidential Environment Awards 2025



Dr. Samantha Ranaweera and his research team received the Presidential Gold Medal Award for the Environmentally Friendly Innovation Open (Team) Category at the Presidential Environment Awards Ceremony for the year 2025, which was held on 23rd October 2025 at BMICH. The award consists of a trophy and certificates. The research was completed under the AHEAD RIC Round 2, Number 18 Grant. The invention relates to the development of Novel Carbon Black materials from the waste tyre pyrolysis process.

The Research Team:

1. Dr. Samantha Ranaweera (Supervisor)
2. Dr. Jeewantha Sampath (Co-supervisor)
3. Mrs. Malmi De Zoysa (MPhil Degree student)
4. Mrs. Vindya Liyanagama (MPhil Degree student)

# ROLE OF CHEMISTS IN GREEN AND SUSTAINABLE INDUSTRIES

Sustainable and Green industries globally commit to the sustainable development which aims to address the environmental challenges arising day by day. Chemists are in the forefront of this transition playing a pivotal role in the chemical processes which turn the raw materials into value-added products that are both environmentally benign and economically viable. It is no doubt that, chemical industries are a significant contributor in uplifting the standard of living maintaining the quality of life. However, manufacturing processes and waste disposal cause a negative environmental impact declining the Earth's natural resources that are for future use. In this aspect, the key role of chemists is to maintain the symbiotic relationship between Green Chemistry and sustainable practices that facilitate the equilibrium between human activities and natural world.



The United Nations have declared a framework consisting of 17 Sustainable Development Goals (SDGs) which are aimed to be achieved by 2030. Green chemistry is a key factor in achieving the SDGs including, zero hunger, good health and well-being, clean water and sanitation, affordable and clean energy, industries innovation and infrastructure, responsible consumption and production and climate action. Chemistry is directly related in fulfilling these goals while sound management of chemicals, reactions and reducing waste release to air, water and soil which could create adverse effects. The twelve fundamental principles that pave the path to

Sustainable and green chemical industries have been proposed by Paul Anastas and John Warner in late 1990s. Although they were proposed more than 25 years ago, they still hold not only true for the green reactions and processes but also have considerably affected the development of sustainable metrics to measure the environmental footprints of the processes. This model serves as a guide to use of safer chemicals, utilize productive catalysts, reduce the use of hazardous substances, and promote the renewable energy sources while minimizing the waste generation. Thus, the rate of both finite resources depletion and pollution decreases making a positive impact on environment as well as the quality of life. The twelve principles of Green Chemistry focus on preventing the pollution at its source than treatment at the end of the process. These twelve principles include: prevent waste by designing the reactions to minimize waste generation; atomic economy that incorporate all materials to final products; less hazardous synthesis using methods that reduce or eliminate the use of toxic substances; safer chemicals which produces effective as well as less environmental and health risky products; safer solvents instead of traditional hazardous solvents; energy efficiency by implementing reaction processes at ambient temperatures and pressures; Favouring renewable stocks than depletable raw materials; avoiding derivatives by minimizing the use of temporary modifications in chemical synthesis; employing productive catalysts that increase reaction

rate; designing the processes for degradation of products into innocuous substances at post-use; real-time analysis by monitoring the processes to prevent waste formation; and accident prevention by minimizing risk of explosions and releases.



The role of a chemist is to incorporate chemistry to innovate industrial productivity by reducing environmental footprints. The Strategy and Gap Analysis is a comprehensive strategy that emphasizes 'what', 'why' and 'how' the sustainability goals and expectations of green industries are to be fulfilled in the future. It helps to identify the negative consequences of chemical processes, re-examine and design smarter processes to convert raw materials to products, handle waste and recycle them. Modern chemists are eager in utilizing renewable energy sources such as solar cells with advancement of photovoltaic materials improving the efficiency of solar panel and bio fuel production benefitted from the enzymatic processes to convert biomass into energy. Also, the energy requirements are reduced while improving the yield by the use of catalysts. In most of the textile and pharmaceutical industries, organic solvent usage has been replaced by environmentally friendly solvents like supercritical Carbon Dioxide. As a solution to plastic pollution, biodegradable plastics like PHA (Polyhydroxyalkanoates); a class of biodegradable plastics produced by bacteria and advancement in polymer chemistry has led to recycle packing materials and consumer goods. Along with that, the water treatment technologies and waste management

systems have been upgraded by processes like Advanced Oxidation Processes (AOP's) using powerful oxidants like Ozone, H<sub>2</sub>O<sub>2</sub> and UV light, photocatalysis and advanced filtration methodologies such as reverse osmosis, nanofiltration and ultrafiltration. These contribute to ensure clean water access and minimize industrial discharges to ecosystems. The 3R system 'Reduce, Reuse and Recycle' serve as a guide to sustainable waste management. Thereby, recycling methods like Hydrometallurgy; involving chemical processes to extract metals from electronic waste and other complex materials is important to reduce toxic waste. In the field of agriculture, pesticides are used in larger scale and they usually impose a threat to human, wildlife and the nature. In order to remove pesticides from water masses, a reusable, highly selective smart filter has been introduced by the scientists at the University of Lincoln. Apart from that, fertilizer containing Nitrogen, Phosphorus and Potassium are highly demanded by the crops. The traditional methods of fertilizer production emit huge amounts of Carbon and the researchers at the University of Minnesota have introduced a new technology using non-thermal plasma assisted catalytic reactions resulting Nitrate-rich liquid which can be used as a fertilizer. Also the fully biodegradable, water-soluble polymer coating which encapsulate the Nitrogen fertilizer reduces the loss of premature Nitrogen in traditional methods. The agrochemicals usually utilize larger amounts of organic solvents and surfactants to improve solubility. In contrast to this, researchers at the University of Waterloo have designed nanomaterial with the ability of serving as dispersing agents for agrochemicals. Apart from the advancement of technologies related to chemical industries, the concurrent environmental monitoring and assessment should be carried out to maintain the environmental conditions at equilibrium state. High-Resolution Mass Spectrometry (HRMS) techniques such as Fourier Transform Ion Cyclotron Resonance (FT-ICR) and Orbitrap MS provide high mass accurate and resolved identification and characterization of unknown compounds and pollutants. Biosensors and bioassays utilizing enzymes, microorganisms, and antibodies allow the rapid and sensitive detection of environmental pollutants. Microfluidic devices called as lab-on-a-chip devices are miniature analytical systems which are capable of performing complex

analyses based on small volumes of samples. Real-time or near-time monitoring of environmental parameters can be performed by field-deployable sensors in water quality determination and soil contamination checkups. With the advancement of Data Science and Artificial Intelligence, the environmental monitoring and analysis have become rapid and easy and also efficient. Hence, the more accurate and comprehensive assessment of environmental quality drives the world towards sustainable and green industries.

In conclusion, the role of a chemist is to drive the transition towards a more sustainable future while developing innovative and eco-friendly solutions, minimizing environmental impact, conserving resources, uplifting the economy and creating a healthier planet. The process of transforming the traditional industries into greener and sustainable industries is a continuing process with the advancements in science. Chemists are in the frontline of innovating and introducing sustainable practices that are crucial to ensure a prosperous and sustainable future for the generations to come.

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# THE ULTIMATE MOLECULAR SPONGE: METAL-ORGANIC FRAMEWORKS

The Nobel Prize in Chemistry has been awarded 117 times since 1901 by the Royal Swedish Academy of Sciences in Stockholm. This year the Nobel Prize in Chemistry was awarded to three visionary scientists on their groundbreaking research in material science by inventing 'The Molecular Apartment Building'. Susumu Kitagawa of Kyoto University, Richard Robson of the University of Melbourne, and Omar M. Yaghi of the University of California, Berkeley, share the 2025 prize for the development of Metal-Organic Frameworks (MOFs).

MOFs are a new class of synthetic, crystalline coordination network with organic ligands containing large spaces through which gases and other chemicals can be adsorbed. It is described as small on the outside but very large on the inside. A single gram of this porous material can have a total internal surface area equivalent to a football pitch. This depicts various applications such as harvesting water from desert air, gas storage and capture, environmental remediation by storing toxic gases, Hydrogen generation, energy conversion and storage and breaking down traces of pharmaceuticals in the environment.

The journey began in 1989 when Robson combined positively charged copper ions with a tetra nitrile ligand to produce open, repeating structures. However, the resulting crystals were unstable and would collapse. This defied the concept of a cavity-less solid. He foresaw its potential usage as molecular sieves, ion-exchange materials and heterogenous catalysts. Kitagawa and Yaghi joined and worked separately, adding to each other's findings to produce stable metal organic frameworks. Kitagawa demonstrated that it could be made flexible and function as effective gas sorbents and reservoirs of small gases like Methane and Oxygen at room temperature. He also introduced the concept of 'three generations of frameworks' or 'soft, porous crystals' that can change their morphology in response to external stimuli.

Yaghi discovered that they can be modified using rational design and formally defined a MOF. He created the highly stable MOF-5 exhibiting a Langmuir surface area of 2900 m<sup>2</sup>/g. This displayed

better adsorption than zeolites and activated carbon used commercially. The concept of reticular synthesis involving the assembly of rigid molecular building blocks into predetermined, ordered structures was introduced by him and led to the concept of isoreticular frameworks which are families consisting of the same net topology in which the pore sizes and functionalities could be varied.

Examples of framework structures include MOF-303 which has been applied in water adsorption from low-humidity air, MIL-101 with large cavities that has been used in catalysis and in storage of H<sub>2</sub> and CO<sub>2</sub>, UiO-67 used to absorb PFAS from water, ZIF-8 for mining rare-earth metals from wastewater, CALF-20 involved in capturing CO<sub>2</sub> and NU-1501 which has been developed to store H<sub>2</sub>. Some frameworks were large enough to accommodate myoglobin's and green-fluorescent proteins.

With the added advantage of being recyclable and its versatility, continuous advancement and integration to form composite structures could potentially resolve some of the planet's most critical challenges and improve the quality of life for generations to come.



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# THE EDUCATOR'S COMPASS: ON GUIDING THE NEXT GENERATION

AN INTERVIEW WITH DR MADURANI EDUSSURIYA



## Q: Who is Dr Madurani Edussuriya?

“I am D. Madurani Edussuriya, a Senior Lecturer (Grade I) in the Department of Chemistry at the University of Ruhuna. My academic journey led me to earn my MSc and PhD in Moscow, Russia, which provided me with a strong foundation in Physical and Surface Chemistry.

Throughout my career at the University of Ruhuna, I have had the privilege of serving as the Head of the Department of Chemistry. I am also honoured to be a Fulbright Research Fellow, having worked at Mississippi State University on environmental remediation projects.

My research is driven by a passion for sustainability and Green Chemistry. I focus on:

- ◆ Surface Chemistry & Catalysis
- ◆ Environmental Protection
- ◆ Green Synthesis

Beyond my laboratory and lecture hall, I am deeply committed to the scientific community in Sri Lanka. I have chaired organizing committees for the Ruhuna International Science and Technology Conference

(RISTCON), and the Ruhuna Undergraduate Science Symposium (RUSS), and I regularly serve as a reviewer for scientific journals to support the next generation of researchers.”

## Q: How did your university experience shape you?

“My university experience was a profound turning point that shaped both the scientist and the person I am today. It began with a leap of faith, taking a scholarship to the People’s Friendship University of Russia. It was one of the best decisions of my life, though it challenged me immediately; I had to master the Russian language in just three months to keep up with my studies.

The academic rigor in Russia taught me the value of true understanding over memorization. Navigating a curriculum filled with extensive reading and mandatory 'colloquiums' taught me that success comes from a deep curiosity about the subject matter, not just by performing for an exam.

Beyond the classroom, the university was a global crossroads. Meeting people from every corner of the world and traveling at a young age opened my eyes to the beauty of diversity. It taught me that despite our different backgrounds, we are united by love and kindness.

Perhaps most importantly, I was shaped by the humility and dedication of my educators. They treated us like their own children, and their caring nature became the blueprint for how I approach my own professional and personal life today. That period gave me the enthusiasm and the knowledge that still fuels my career.”



## Q: Why is it important to study Chemistry as a subject?

“When students ask me why they should dedicate themselves to this field, I always start with one simple truth: Chemistry is omnipresent. There is no corner of the universe where it does not exist. As I often say, 'Everywhere, chemistry is there.' Studying chemistry is important because it is the key to three fundamental realizations.

It is the ‘Grammar of Life’. Chemistry is not just a subject in a textbook; it is the very language of existence. It is essential for life itself. By studying it, you gain a fundamental understanding of how things operate, from the way our bodies metabolize food to how the stars produce light. It turns the 'magic' of the world into understandable, predictable science.

It is the 'Central Science' of connectivity. One of the most exciting aspects of Chemistry is its deep interconnectedness with every other discipline. Whether you are interested in Biology, Physics, Medicine, or Engineering, Chemistry provides the bridge. This makes it a uniquely vibrant and dynamic field; it never exists in a vacuum, but rather enriches everything it touches.

It offers limitless application. As Chemistry is applied universally, the career paths it opens are vast. It reaches across all spheres of life and every professional field, from environmental remediation and green energy to pharmaceuticals and product development. Given this enormous range of applications, I truly believe it is the optimal subject to

pursue for anyone who wants to make a tangible impact on the world.

To study Chemistry is to study the world at its most foundational level. It is a journey that is as intellectually exciting as it is practically necessary.”

## Q: What is the optimal way to study Chemistry, especially in a university setting?

“In a university setting, the way you study is often more important than how much you study. If you want to excel in Chemistry, you must move beyond the role of a passive student and become an active architect of your own knowledge. Here is how I recommend you approach it:

Build a foundation of conceptual continuity. Chemistry is a beautifully logical discipline, but its beauty is fragile, it is entirely interconnected. You must understand every concept from the ground up. If you fail to grasp the first link in the chain, the next one will inevitably be out of reach. I always caution students against the trap of superficial memorization. Students often memorize facts hoping for an easier exam, but trying to recall data without a conceptual framework is actually much harder. True learning happens when you understand one process so well that you can naturally relate it to the next.

Embrace an inquisitive and analytical mindset. To truly learn, you must question everything. Do not approach your textbooks or lectures as a set of finished facts to be stored away; approach them analytically. Use critical thinking to dismantle a process and see how it works. This inquisitive mindset does more than just help you pass Chemistry exams; it expands your overall cognitive abilities. By training your brain to see the 'why' behind the 'what,' you are developing a mental toolkit that will serve you in every sphere of life.

Practice collaborative learning. Knowledge should never be a lonely pursuit. I strongly believe that collaborative learning is vital for mutual improvement. You should never hesitate to ask questions, from your lecturers or your peers. When you work together and discuss complex ideas,

you are forced to articulate your understanding, which solidifies the concept in your own mind. We improve faster when we improve together.”

### **Q: As you reflect on your academic life, how do you feel?**

“When I reflect on my journey, the word that comes to mind is immense contentment. I can say with total sincerity: 'I am very happy.' My joy doesn't come from titles or accolades, but from the realization that my life has been useful to others.

My greatest sense of fulfillment comes from the quiet moments spent with my students. Beyond the Chemistry curriculum, I have always strived to be a trusted resource for them during their most challenging times. I truly believe in the weight of our words. I often tell people: 'If one sentence I said could help a student, then I am happy. I can express that happiness until the end of my life.' Knowing that a word of encouragement or a piece of advice helped someone navigate their personal or academic life is the highest reward I could ever receive.

I have always felt that our work should be like a catalyst, initiating reactions that continue long after we are gone. I am proud to have initiated projects within the Department of Chemistry and the Faculty of Science that have now become part of our institutional fabric.

Whether it was serving as the Chairperson of the first RISTCON, or establishing the Buddhist Society and the Faculty Day, these were not just events; they were foundations. It brings me peace to know that these traditions will endure beyond my retirement, continuing to serve the university community for years to come.

To me, an academic life is not just about teaching a subject; it is about building a community and nurturing the next generation. I look back not at a career of 'work,' but at a 'lifetime of service'. My heart is full because I know that my efforts, both in the lab and in the lives of my students, will live on.”

### **Q: What advice do you have for students?**

“If I could give you a compass to navigate your years here and the life that follows, it would be built on these three principles;

**Prioritize Understanding Over Acquisition:** My core advice is simple but absolute: 'Understand what you learn, otherwise it is of no use.' Do not collect facts like trophies; absorb them as tools. Knowledge without understanding is like a formula without variables, it cannot solve real-world problems. When you truly grasp a concept, you aren't just passing an exam; you are building the intellectual foundation for a successful and meaningful future.

**Treasure the Opportunity:** The university education is a rare and precious gift. I urge you: do not take it for granted. This period of your life is a unique window to deepen your knowledge and expand your horizons. Approach every lecture, every lab session, and every discussion with the respect it deserves. Use this time effectively, for it is the soil in which your future career will grow.

**Carry Your Gratitude with You:** Behind every student sitting in a lecture hall, there is a story of sacrifice. Your success is never yours alone; it also belongs to your parents, who have given so much to see you reach this stage. As you strive for excellence, let one of your core motivations be to honour them and make them proud. Acknowledging the sacrifices made for your success will keep you grounded when things are difficult, and humble when you succeed.”



# DON'T MISS THE 'GOLDEN OPPORTUNITIES' IN CHEMISTRY - HARNESS THEM!

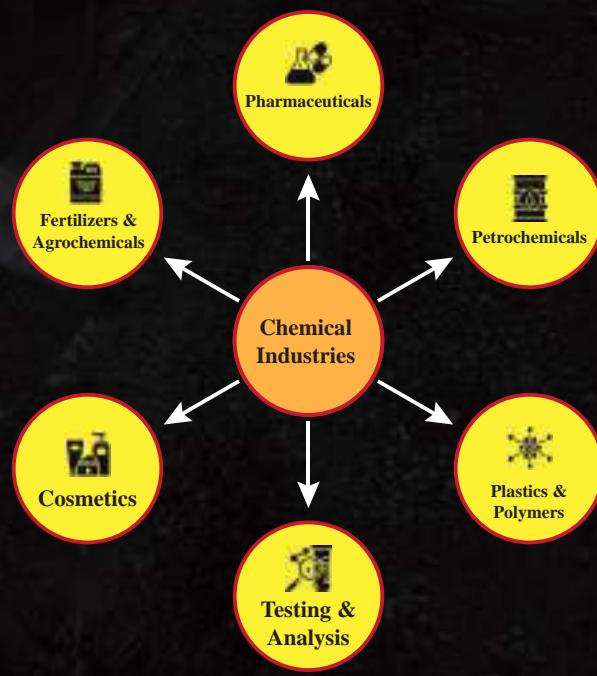
One of the key intentions of this magazine is to inspire our young undergraduates to pursue careers in Chemistry and explore the fascinating world it offers. As a central science, Chemistry provides numerous opportunities in academia, research, and industry. There are abundant prospects for Chemistry graduates to continue their higher studies both abroad and in Sri Lanka. Many become academics and researchers at world-renowned institutions, contributing to scientific advancement and serving humanity on a global scale. As highlighted in the alumni testimonials featured in this magazine, many of our Chemistry special undergraduates are currently studying or employed in the USA and other countries.

There are also extensive opportunities for Chemistry students to become research and development scientists. Although the number of research institutes in Sri Lanka is limited, we have advanced facilities such as the Sri Lanka Institute of Nanotechnology (SLINTEC) in Homagama, and the Institute of Fundamental Studies (IFS) in Hanthana, Kandy. In addition, government research organizations such as the Industrial Technology Institute (ITI), Tea Research Institute (TRI), Rubber Research Institute (RRI), and others provide valuable opportunities for chemists to engage in scientific research. The private sector also plays a growing role, with several companies such as John Keells Research and LOLC focusing on product development, innovation, and applied science. In countries like the USA and other developed nations, state-of-the-art research laboratories, including NASA Research Center, Argonne National Laboratory, Oak Ridge National Laboratory, and many more, provide exceptional environments for scientific discovery. Many of our graduates who pursue postgraduate studies in Chemistry join these advanced laboratories as research scientists, contributing to cutting-edge innovations worldwide.

There are abundant opportunities for chemists in industries in Sri Lanka and around the world. The chart below illustrates the various sectors where Chemistry undergraduates can find employment.

We often find chemistry graduates working as Quality Control Analysts, Quality Control Chemists, Quality Assurance Chemists, Analytical Chemists, Laboratory Analysts, and similar roles in chemical industries in Sri Lanka. Those who begin their careers in these positions can often climb the career ladder, gaining valuable experience and professional qualifications, and eventually become top managers within their companies. I hope you read about our alumni's experiences in the chemical and pharmaceutical industries and find inspiration in their journeys.

Chemistry undergraduates gain a strong combination of practical, analytical, research, and professional skills. They learn laboratory techniques such as solution preparation, titration, chromatography, spectroscopy, and chemical synthesis, while also developing the ability to interpret experimental data and solve scientific



problems. They also develop computational skills for data analysis and molecular modeling, along with research skills such as literature study, experimental design, and scientific reporting. Soft skills including communication, teamwork, time management, and professional ethics are strengthened through projects and laboratory work. A list of Sri Lankan industries where chemistry undergraduates can find employment is provided in the table.

Sector	Example Companies in Sri Lanka
<b>Pharmaceutical</b>	Astron Limited, Celogen Lanka, Morison PLC, Navesta Pharmaceuticals, State Pharmaceuticals Manufacturing Corporation (SPMC)
<b>Polymer &amp; Rubber</b>	Union Chemicals Lanka PLC, Gamma Chemicals, VS Polychem, Dipped Products PLC, Ancell Lanka
<b>Petrochemical</b>	Petro Chemicals Lanka Pvt Ltd, Ceylon Petroleum Cooperation, Caltex
<b>Testing &amp; Analysis</b>	Bureau Veritas, MicroChem Laboratories, SGS Lanka, Intertek Lanka
<b>Cosmetics / Personal Care</b>	Purechem Lanka, NEOChem International, Hemas Personal Care
<b>Agrochemical &amp; Fertilizer</b>	Trust Chem International, Lankem Ceylon PLC, CIC Agri Solutions



Chemistry undergraduates gain a strong combination of practical, analytical, research, and professional skills. They learn laboratory techniques such as solution preparation, titration, chromatography, spectroscopy, and chemical synthesis, while also developing the ability to interpret experimental data and solve scientific problems. They also develop computational skills for data analysis and molecular modeling, along with research skills such as literature study, experimental design, and scientific reporting. Soft skills including communication, teamwork, time management, and professional ethics are strengthened through projects and laboratory work.

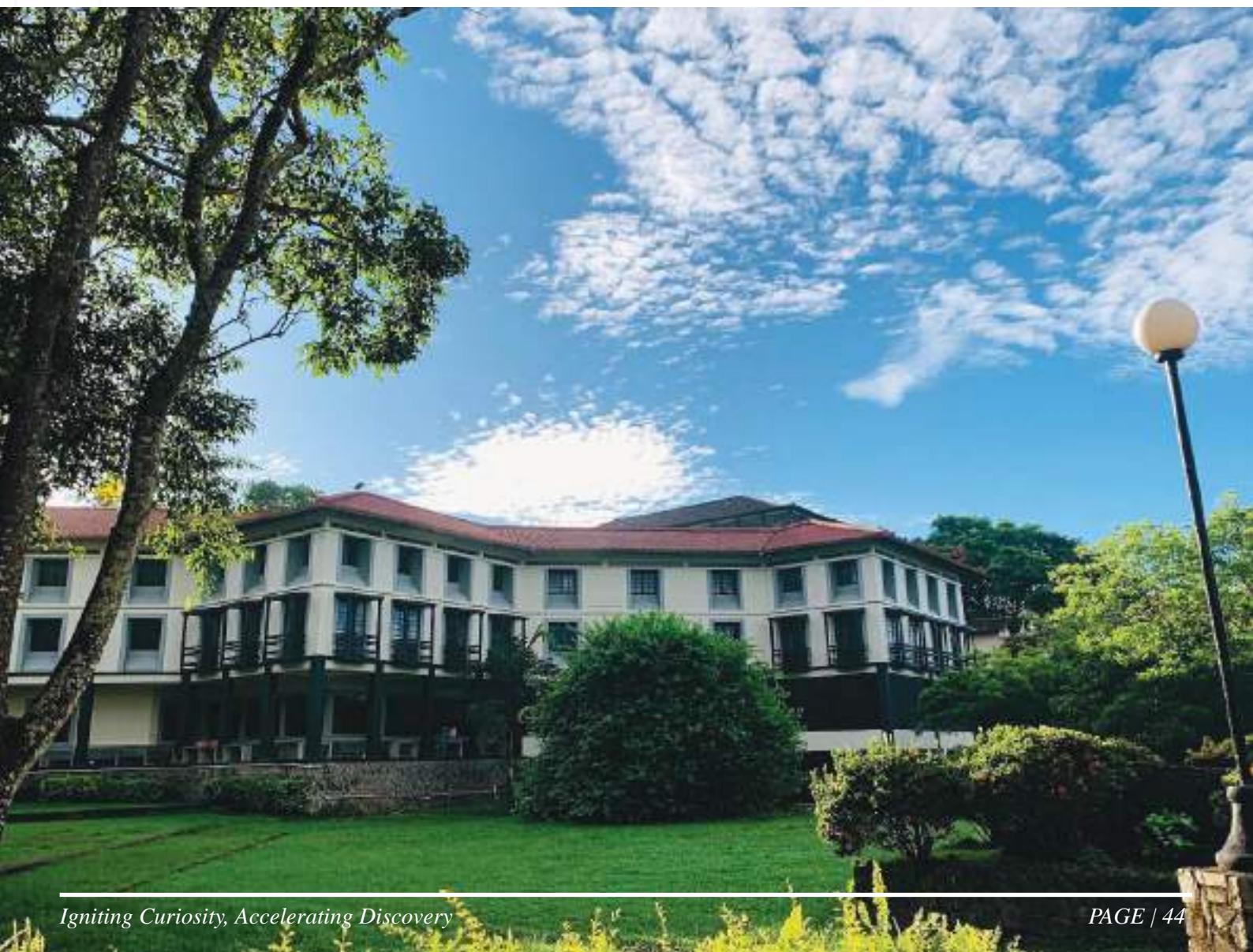
Engaging with student societies such as the Chemical Society and taking on leadership roles to organize various projects and activities is also an important part of university life. As shown in this magazine, the Chemical Society has carried out numerous impactful activities in the recent past. Moreover, as you can also see, our students participate in many inter-university competitions and have earned significant recognition. These achievements are very important additions to your curriculum vitae and help strengthen your professional profile.

As Chemistry undergraduates, you have excellent opportunities to build a successful career. However, it is essential to make the best use of these opportunities. It is your responsibility to work diligently during your undergraduate studies to acquire the necessary knowledge and skills. A higher Grade Point Average (GPA) demonstrates strong academic ability and increases your chances of securing scholarships or assistantships for postgraduate studies. Besides English proficiency is also vital requirement for success in both the academia and industry, particularly in communication, presentations, and scientific writing. Engaging in undergraduate research and pursuing it with dedication enables you to develop a wide range of essential skills and practical experience requires for both the academia and industry.

As you can see from the numerous inspiring success stories and insightful articles featured in this magazine, you are gifted on a 'golden opportunity.' Whether you transform that golden opportunity into lasting success or let it pass by depends entirely on your passion, perseverance and unwavering commitment.



**Dr Chinthaka Nadun Ratnaweera**  
**Senior Editor - Chemical Society**  
**Department of Chemistry**  
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# FAQ's

## 1. How to get 'Student Membership' of the Chemical Society?

Students who are registered as full time students of the Faculty of Science studying Chemistry as a subject at the University of Ruhuna, can obtain the membership of the society by paying LKR 50.00 per annum or LKR.100.00 for a three-year period.

## 2. When the 'Renewal of Membership' should be done?

Renewal of membership of the Chemical Society should be done within the first month of the Semester I of the respective year.

## 3. How the 'Election of Office Bearers' is done?

- All office bearers are elected from the student members who study Chemistry as a subject in the university as stated in the Constitution of the Chemical Society.
- Only the students who are registered as members have the voting rights.
- The office bearers shall be elected at the Annual General Meeting.

## 4. When an Annual General Meeting is held?

An Annual General meeting is held within the first semester of each academic year preferably within the first four weeks.

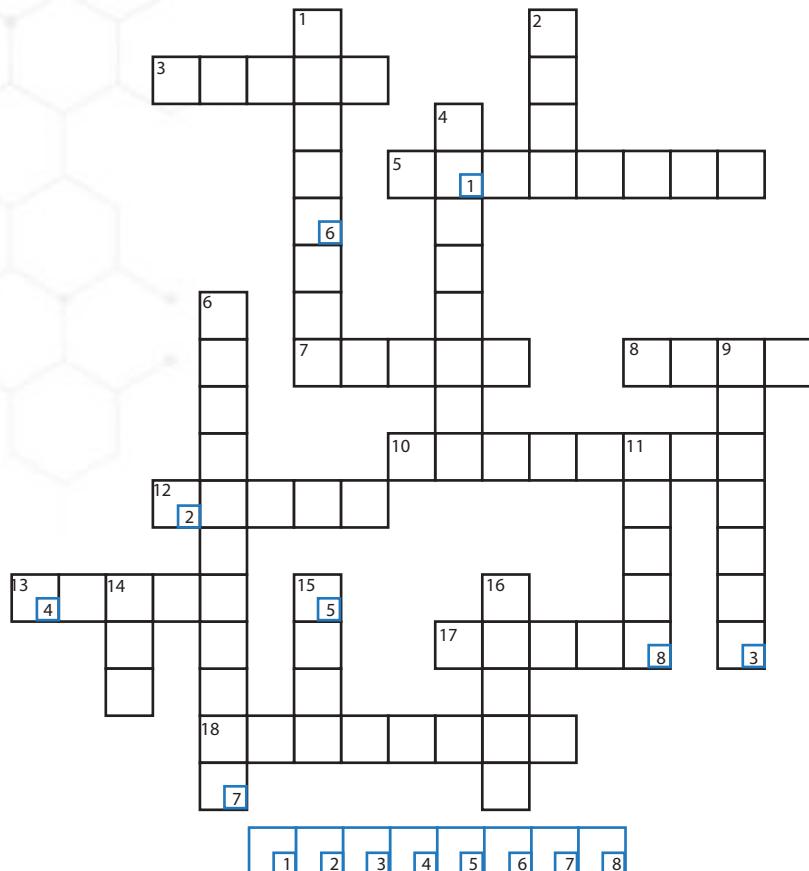
## 5. What is the process for 'Terminating of Membership' ?

- Resignation from any post can be effected at any time by an office bearer by writing a letter to the Secretary of the Chemical Society, with one month notice.
- Cessation of membership of any member can be decided by the Executive Committee, and should be approved in a General Meeting.

## 6. What are the 'Aims & Objectives' of the Chemical Society?

- To facilitate and promote the advancement, appreciation, and understanding of Chemistry within the university among undergraduates.
- To facilitate and promote the interpersonal relationships among university undergraduates, academic community and undergraduates from other universities.
- To facilitate, disseminate knowledge, and promote Chemistry-related activities among schools in the Southern Province.

# Test Your Knowledge



## Horizontal

3. A colourless, odourless highly toxic nerve agent
5. A toxic chemical included in Schedule 3, whose manufacture was studied by F. A. Victor Grignard
7. A database used in identifying Chemical Warfare Agents (CWA)
8. A commonly used analytical technique for chemical weapon identification (Acronym).
10. MOF-5 displayed better adsorption than these materials and activated carbon which are used commercially
12. One of the scientists awarded the 2025 Nobel Prize in Chemistry who formally defined a MOF.
13. Poison from beans of the castor oil plant
17. An area of chemistry focused on principles that reduce the use of hazardous substances and minimize waste generation.
18. Colourless liquid blistering agent that contains arsenic and has an odor like geraniums.

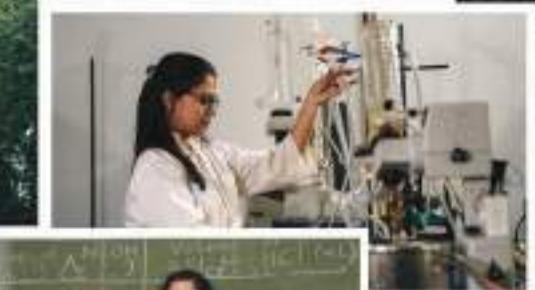
## Vertical

1. One of the 2025 Nobel laureates who demonstrated that MOFs could be made flexible and function as gas sorbents.
2. Crystalline coordination networks with organic ligands that are often called 'the molecular apartment building' (Acronym).
4. The gas first used in a large-scale attack in the first battle of Ypres in 1915.
6. Development that aims to address environmental challenges and facilitate equilibrium between human activities and the natural world.
9. A powerful chemical warfare agent known for causing severe burns
11. A nerve agent that acts as an organophosphorus acetylcholinesterase inhibitor.
14. The international arms control treaty that prohibits the development, production, stockpiling and use of chemical weapons
15. The implementing body of the CWC, located in the Netherlands, which requires member states to destroy chemical weapons
16. First name of the German physical chemist known as the father of Chemical Warfare.



## Solved Puzzle Submission

The winner will be selected by a random selection of the submitted correct responses by the Executive committee of the Chemical society. The winner will receive an official announcement email. The winner will be rewarded and will be presented in the next volume of the CATALYST magazine.





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