

## CCS Researcher of the Year Award

Awarded annually to a full time internal academic of the College of Chemical Sciences, Institute of Chemistry Ceylon, for the most outstanding contributions to scientific research in the course of a particular year. The criteria for the evaluation of the awardee includes peer-reviewed scientific publications, including research articles, review articles, and book chapters, conference presentations and Web of Science citations garnered throughout the course of the year.

### CCS Researcher of the Year Award - 2023



**Dr. Gobika Thiripuranathar** obtained her Graduateship in Chemistry qualification with first-class honors from the College of Chemical Sciences, Institute of Chemistry Ceylon, and topped the batch and is the recipient of the Shireen Jayasuriya Memorial Gold Medal in 2006. She

secured the overseas research student award scholarship and Heriot-Watt University scholarship in 2008 to pursue her PhD at Heriot-Watt University, Scotland, where she worked on polyhedral boron cluster chemistry. Dr. Gobika has 29 peer-reviewed publications and 3 chapters to her name, and 39 communications, with over 450 citations and an h-index of 14. Her publications include 19 original research and 10 review articles. Her interest in research focuses on the sustainable production of nanomaterials for value addition. Dr. Gobika currently serves as a senior lecturer and the Head of the Department of Chemistry at the College of Chemical Sciences, Institute of Chemistry Ceylon.

### Abstract of the CCS Researcher of the Year Award - 2023

#### Agro-waste mediated nanomaterials for potential applications

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Sri Lanka is a fertile tropical land with enormous natural resources, and among this, 65% of the cultivable land is being used for agriculture. The agriculture sector is one of the most prominent sectors in Sri Lanka, and more than 72% of the population living in rural areas depend on agriculture for their livelihoods. In Sri Lanka, most of the widely cultivated plant varieties have been solely grown to obtain only a single consumable product, and a significant percentage of them are discarded as waste without any economic benefit to the country. According to the Food and Agriculture Organization (FAO) of the UN, Sri Lanka generates 7,000 tonnes of solid food waste per day, which is a serious threat to human health as it pollutes the environment. However, due to the lack of knowledge of their potential risk, they

are not properly managed. The research carried out on consumable plant parts and the agro-wastes generated from them has proven that they exhibit excellent biological activities and distinctive pharmacological effects; hence, they could be an ideal alternative to toxic and expensive synthetic products with no side effects. Green nanotechnology could be an ideal solution as this is one of the most sustainable technologies contributing effectively to enhancing the value of agro-waste by regenerating it as valuable products and thus could bring significant income to the country. In the past few decades, synthesizing nanomaterials (NMs) using green nanotechnology, especially using agro-waste, piqued the interest of scientists due to their natural abundance, availability of the number of biological components in

them, eco-friendliness, and easiness of synthesizing NMs using them. Amongst, inorganic nanoparticles (NPs), such as metal oxide and metal NPs, are stable, less toxic, hydrophilic, and biocompatible than organic NPs. At the same time, nanocomposites (NCs), made by incorporating two nanoscale materials, are less toxic and exhibit enhanced and sometimes unpredictable activity due to the synergistic effect of the individual NPs. In this context, the research carried out by our research group on plant-waste-mediated NMs exhibited higher antioxidant,

anti-inflammatory, and antibacterial activities than their plant counterparts. Meanwhile, in most cases, the NCs synthesized from the agro-wastes exhibited higher activity than the individual NPs. Therefore, phyto-genic NCs incorporated cellulose nanocrystalline, synthesized from agro-wastes, membrane filter was prepared for wastewater treatment, which exhibited exceptional susceptibility to water-borne pathogens. However, further research must be conducted on their cytotoxicity before the practical applications.

### Professor M. U. S. Sultanbawa Award for Research in Chemistry

Awarded for the best research paper presented at the Annual Sessions of the Institute of Chemistry Ceylon, for the unique, distinguished and significant contribution made to the cause of Science, Chemistry, Education and Research in Sri Lanka.

### Professor M. U. S. Sultanbawa Award for Research in Chemistry - 2022



**Mr. Damith D. Lekamge** graduated from the University of Sri Jayewardenepura (USJ) with B.Sc. (Honours) degree in Chemistry with a first class having topped the batch in 2021. He also won several prestigious monetary prizes and gold medals at the general convocation 2021, namely, the Chemical Industries Colombo (CIC) Ltd. prize for obtaining the highest GPA in the third-year examination, the CIC gold medal and prize for obtaining the highest GPA in the final-year examination, the Professor Tuley de Silva Gold Medal for having the highest GPA for four-year undergraduate studies, as well as the Professor W. S. Fernando Gold Medal for having the highest GPA in Physical and Inorganic Chemistry in the B.Sc. (Honours) in Chemistry degree programme at USJ.

After graduation, he worked as a Temporary Demonstrator and an Assistant Lecturer in the Organic Chemistry laboratories attached to the Department of Chemistry, USJ, for a one year period of time. Since then, he is working as a Research Assistant under the mentorship of his undergraduate research advisor, Dr. Isurika Fernando at the Department of Chemistry, USJ. During his research career, he gained expertise in the synthesis and characterization of Schiff-base macrocycles, synthesis and material characterization of host-guest inclusion complexes and Cu-catalyzed synthesis and characterization of small organic molecules. Based on his academic merits and research experiences, he has been offered a fully-funded Ph.D. scholarship from one of the prestigious universities for Organic Chemistry in the USA, Boston College, which will be commencing in fall 2023.

Mr. Lekamge will be awarded the Professor M. U. S. Sultanbawa Award for Research in Chemistry for the presentation of his research on “Synthesis and characterization of inclusion complexes of *Ageratum conyzoides* L. essential oil in  $\beta$ -cyclodextrin” in 2022.