



# 2020 SICASH

SLIIT INTERNATIONAL CONFERENCE ON  
ADVANCEMENTS IN SCIENCES & HUMANITIES

THE PROCEEDINGS OF  
SLIIT INTERNATIONAL  
CONFERENCE ON ADVANCEMENTS IN  
SCIENCES & HUMANITIES

**“SUSTAINABILITY  
& WELL-BEING”**

**26<sup>TH</sup> MARCH 2021**

Organised by:



**FACULTY OF  
HUMANITIES & SCIENCES**



PROCEEDINGS OF THE  
SLIIT INTERNATIONAL CONFERENCE ON ADVANCEMENTS  
IN SCIENCES AND HUMANITIES [SICASH]

**“Sustainability and Well-being”**

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## **Message from the Chancellor**

It is with great pleasure that I convey this congratulatory message to the “SLIIT International Conference in Advancements on Sciences and Humanities” (SICASH), the very first of its kind in Sri Lanka, will be organized by the Faculty of Humanities and Sciences of Sri Lanka Institute of Information Technology (SLIIT). I understand that this conference will be an open forum for academics, professionals and students, to present their latest findings and research in the domains of Natural Sciences, Law, Education, Psychology, English Language and Literature and Nursing.

The SICASH 2020 Conference, to be held on 26th March 2020, intends to host participants from both Sri Lanka and abroad. It is with great pleasure I send this message to you on this important event.

Being one of the elite higher education institutions in Sri Lanka with affiliations and partnerships with renowned universities throughout the world, SLIIT has brought forth prominent entrepreneurs, experts and specialists in many occupational fields and the Faculty of Business has been, and will continue to be, a proud contributor to the institution’s prestige. An extremely dedicated, expert staff focused on motivating students to think critically and analytically and an environment where students can improve their ideas creatively and apply their knowledge effectively along with strict measures to maintain and improve the teaching standards and resources have been the foundations in producing individuals of the highest caliber to cater for the

I would also like to make this an opportunity to express my most sincere appreciation to SLIIT staff both academic and non-academic for their brilliant ideas as well as the committee members for their ceaseless support and the distinguished invitees and attendees whose presence has made this occasion an outstanding success, and on behalf of the entire staff, I wish all our graduates the very best for their future.

**Prof. L. L. Ratnayake**

Chancellor





## **Message from the Vice-Chancellor**

I am pleased to send this congratulatory message to the SLIIT International Conference in Advancements on Sciences and Humanities (SICASH), organized by the Faculty of Humanities and Sciences. This event bears great significance as the Inaugural Conference hosted by SLIIT's youngest Faculty, Humanities and Sciences since its establishment in 2019.

The Faculty continuously strives to create a research-rich environment and culture for our students. Active engagement in conferences of this nature will inculcate innovation, critical thinking and intellectual independence in our students which enable them to grow as responsible professionals of competence and integrity in various aspects of humanities and sciences.

The SICASH has been designed in such a way that it facilitates learning and networking in an engaging environment. It will provide an ideal platform for scholars to share their research findings and experiences in multiple areas such as Natural Sciences, Law, Education, Psychology, Nursing, English Language and Literature. The participants will also have the opportunity to immerse themselves in free exchange of ideas, to learn about the latest trends and common challenges in brainstorming sessions and to network with diverse minds.

I wish to commend the efforts of the Dean, Heads of Schools and the Academic Staff of the Faculty of Humanities and Sciences for their efforts in organizing the SICASH in order to foster research among the undergraduates and the entire SLIIT academic community.

I offer my best wishes for a productive conference.

**Professor Lalith Gamage**

Vice-Chancellor



## **Message from the Deputy Vice-Chancellor**

I am delighted to provide a congratulatory message to the organizers and participants of SICASH 2020. The Faculty of Humanities and Sciences at SLIIT is the organizer of this inaugural conference, and the Faculty is known for its high-quality academic programs and innovative research. SICASH 2020 is a multidisciplinary conference that caters to researchers from a broad range of subject areas. It is, therefore, an excellent forum for scholars from different disciplines to meet, identify and discuss research synergies and collaborate to solve the challenging problems faced by the world. In this regard, SICASH is happening during a very challenging period with the world struggling to overcome the Covid-19 pandemic. The pandemic has reminded us of the importance of basic and applied research and the need to advance the frontiers of knowledge through international collaborations.

I am pleased to note the significant interest from the local and international scholars in SICASH 2020. The organizers have taken considerable efforts to deliver an exciting conference program with prominent keynote speakers. I am confident that the SICASH conference series will become a pre-eminent international forum to present high-quality research and discuss the best approaches to tackle the problems of today and tomorrow.

I thank the organizers for their efforts and time and the participants for joining SICASH during a challenging time. I wish all participants of SICASH 2020 continued success with their scholarly endeavours.

**Dr. Nimal Rajapakse**  
Deputy Vice-Chancellor



## **Message from the General Chair**

I take great pleasure in writing this congratulatory message on the Inaugural Conference hosted by Faculty of Humanities and Sciences. We are heading to a new normal reshaped by the pandemic: remote working, virtual meetings and online learning which will constantly evolve. The objective of creating this conference is to provide a platform for our academics to showcase their research findings and to encourage dissemination of new knowledge within academia. Being the youngest faculty that offers the most diverse portfolio of programmes, SLIIT International Conference on Advancements in Sciences and Humanities (SICASH) embodies six research areas in both Social and Natural Sciences.

It is my vision to have a research journal published as a follow up activity of SICASH to provide further recognition to selected publications from the conference.

All papers in this conference have been double blind reviewed by a distinguished panel of reviewers in order to maintain high standards. This will result in gaining international recognition for the conference in the future.

I would like to thank the co-chairs, the organizing committee and the faculty members who worked tirelessly to make this conference a reality. I would also like to recognize the contribution made by the reviewers, session chairs and judges to maintain the academic rigor of the conference.

Finally, I extend my heartiest congratulations to all the authors who will be presenting their research work at SICASH 2020.

**Dr. Malitha Wijesundara**

Dean

Faculty of Humanities & Sciences



## Message from a Keynote Speaker

From the time when humans were hunter-gatherers, the practices of crop agriculture have passed through the phases of domestication of wild species and pastoral societies, selection of plants for improved properties, the discovery and application of Mendelian genetics, the discovery of the structure of DNA and the gene revolution, to New Breeding Technologies (NBTs) and gene editing.

In the broadest view, the term NBTs includes both genetically modified (GM) plants, in which genetic traits have been introduced from unrelated, closely related or from the same species, and the rapidly developing technologies of ‘genome’ or ‘gene’-editing. GM crops, which have been grown commercially since 1996, now provide more than 10% of the world’s food supply. Although the safest foods available, public acceptance of GM produce has been compromised by issues wholly unrelated to science, and this has reduced many potentially beneficial applications. The current status of GM crops will be presented.

Genome-, or preferably gene-editing, is a new set of technologies which can be used to modify plant properties. They are derived from bacterial systems for protection against viral infection. Gene editing technologies are based on making double-stranded (ds) break(s) in a target sequence of DNA, with the site of the ds break directed by an RNA sequence, developed as single or multiple guide RNAs (gRNAs). There are various forms of gene-editing based on the site-directed nuclease (SDN) system used – the best known is ‘CRISPR/Cas9’.

When ds breaks occur in DNA, plants (and other organisms) often make mistakes in repairing the DNA. For what is defined as ‘SDN-1’, there is no external genetic material incorporated at the join, but the mistakes take the form of deletion or insertion of bases at the breakage site (Non-Homologous End Joining). For SDN-2 and SDN-3, if an additional oligonucleotide with ends homologous to sequences at either side of the ds break are provided, then additional nucleotides may be incorporated at the repair site, from a single nucleotide up to a complete gene (Homology Dependent Repair).

The significance of this technology is that SDN-1 mutations are simply targeted mutations. Since plant breeding using chemical or irradiation mutagenesis generates random ds breaks in

DNA, and this is an accepted and widely used form of crop breeding, national and international regulations which had captured SDN-1 technology as GM, needed to be re-assessed. As a result, in many countries, including the USA, Canada, most countries in S. America, S. Africa, Japan and Australia, have reviewed GM regulations/policy, and have declared SDN-1 edited plants not to be GMOs.

This is a highly significant change, because it exempts SDN-1 gene-edited plants from being regulated as GMOs, and this has democratized this technology, so that the costs for generating new varieties using SDN-1 technology become essentially the same as for conventionally bred crops. An overview of the current regulatory landscape will be presented. Examples will also be provided for current applications of gene editing to crop improvement, and its future potential both for large scale and horticultural crops.

However, there is one caveat to be aware of, that gene-editing technologies are subject to patents, and a license is required from the patent holder(s) to commercialize new varieties generated using gene-editing technology.

Taking a broader perspective, Agriculture 4.0 involves more than NBTs and gene-editing (Agri-Bio). It includes rapid advances in Agri-Tech and Food-Tech: there is new excitement and investment in all these areas; which will all be needed to feed the world's peoples sustainably from 2050 and beyond.

**Michael G K Jones**

Professor of Agricultural Biotechnology,

Director of the Western Australian State Agricultural Biotechnology Centre, Food Futures Institute, Murdoch University, Australia.



## **Message from a Keynote Speaker**

Though democracy is a vital concept, there is no agreement as to its precise definition. Being an universally recognized ideal shared by peoples throughout the world, democracy is a basic right of citizenship to be exercised under conditions of freedom, equality, transparency and responsibility, with due respect for the plurality of views and in the interest of the polity.

Democracy aims to preserve and promote the dignity and fundamental rights of the individual, among others, to achieve social justice and to create a climate that is favourable for peace. Human rights which are inalienable and inherent rights of people require empathy and the rule of law. Democracy provides the natural environment for the protection and effective realization of human rights. However, the recognition, acceptance, and enthronement of the basic principles of democracy and of human rights in a country's constitution by itself are meaningless, unless they are enforceable at law in the hands of an independent judiciary.

Historical experience reveals that democracy cannot be attained without a system of government which divides power among the co-equal branches of power – the Executive, the Legislature, and the Judiciary. In such a system of governance, the role of the judiciary is paramount. It is the judiciary which channels power related conflicts through a legal process which uses agreed legal reasoning to interpret and apply pre-existing law. The judiciary is in the forefront of the rule of law, which is fundamental to democracy.

The 1st Republican Constitution did not provide for the separation of powers; but it could be recognized that the 2nd Republican Constitution accommodated it. It is vitally important in a democracy that the judiciary as a whole be impartial and independent to be able to realise the basic principles of democracy and to be the arbiter in power related conflicts between the state and the citizen. Role of an independent judiciary is therefore a central component of any democracy and is crucial for Rule of Law and human rights.

According to one of world's foremost judges and legal theorists - Aharon Barak - judicial independence is composed of two foundations: firstly, every judge should be free to decide the matters before him without any improper influences, inducements, or pressures, direct or indirect, from any quarter or for any reason, and, secondly, that the Judiciary is independent of the Executive, and the Legislature, and has jurisdiction, directly, or by way of review, over all issues of a judicial nature. These two foundations - the independence of the individual judge

and the independence of the judicial branch – are cumulative. Neither is sufficient by itself. Only together do the two guarantee the independence of the judiciary. Personal independence of a judge is a constitutional principle. It means that the judge is subject to no authority other than the law. Institutional independence is also a crucial condition because judge's personal independence is incomplete unless it is accompanied by the institutional independence of the Judicial branch, designed to ensure that the Judicial branch can fulfil its role in protecting the constitution and its values.

Personal independence and Institutional independence are protective walls which prevent the Legislature and Executive branches from influencing the way judges realise their role as protectors of democracy and its core values. Breaking these protective walls and the checks and balances mandated by the doctrine of separation of powers, will result in anarchy and the demise of the Rule of Law.

The impeachment motion to remove the 43rd Chief Justice underscored the importance of the role of the judiciary in upholding democracy. The 17th Amendment to the Constitution, 2001 establishing the independent institutions to conserve, secure and protect fundamental democratic values, was felled by the 18th Amendment to the Constitution, 2010. The introduction of the 19th Amendment to the Constitution, 2015 appeared to bring some sanitizing warmth of the early breezes of further democratization and the reinforcement of rule of law. But alas, the 20th Amendment, 2020 put paid to all aspirations! It rolled back the 19th amendment and gave a knockout blow to the rule of law! It gave the President expansive powers and greater immunity and granted him sole and unfettered discretion to appoint all the judges of the superior courts. A state which repressed or persecuted sections of its people could not be regarded as observing the rule of law. A core idea of the rule of law is that the government must be able to point to some basis for its action that is regarded as valid by the relevant legal system. The rule of law provides the foundation for the controls exercised by the judiciary over governmental action through judicial review and in this sense, it is expressive of how the state ought to behave towards its citizens.

Consequently, in a State governed by the rule of law governmental action conforms to precepts of good administration, this being an essential facet of accountable government in a democratic society. Political power can be capable of great and awful feats but it can also be incredibly insecure and fragile. Overreach can shatter an iron grasp. One cannot trade the rule of law for the rule of power.

The “Wellbeing” of the State and all its citizens depends on it.

**Dr. K. Kanag-Isvaran**

President's Counsel



## **Message from a Co-Chair**

Research makes our lives comfortable. From the time it started in Fertile Crescent; approximately 6000 years back, with the production of cheese, bread and wine, it has continued with more sophisticated inventions. Continuation of research is triggered by dissemination and recognition of new knowledge in fora which propagate research culture. Aligning with this environment, Faculty of Humanities and Sciences organized SLIIT International Conference on Advancements in Sciences and Humanities (SICASH) 2020.

The response we received for the call for papers was 77 manuscripts. All the submissions were meticulously selected after going through a double-blind peer review process by at least two subject experts who were mostly academic staff of state and non-state universities. As a result, 61 papers were selected and are ready to be presented as oral and poster presentations.

In this juncture, I would like to express my sincere appreciation to the paper and poster presenters as they are the foundation of this conference. Contribution from the Chairpersons, Judges and Paper Reviewers is enormously valued and appreciated. To organize a conference of this magnitude is not an ordinary task hence my heartfelt appreciation goes to the organizing committee for their untiring efforts to bring this conference into life today. Also, I would like to thank all the sponsoring organizations for providing their generous financial support. Lastly, I would like to thank all the conference participants for their contributions which provided the strength for SICASH.

With this message and on behalf of the Organizing Committee, I invite you to attend and actively participate in this important international gathering.

**Prof. Sriyani E. Peiris**

Head

School of Natural Sciences





## **Message from a Co-Chair**

I am glad to send this message to the first ever SLIIT International Conference on Advancements in Sciences and Humanities organized by the Faculty of Humanities and Sciences, Sri Lanka Institute of Information Technology.

Hosting of research conferences provides an occasion to share one's research findings with others and test their reliability, accuracy, dependability, and completeness in a congenial environment with eminent and experienced researchers and stakeholders providing constructive feedback. It further buttresses the manifold objectives of carrying out research, some of which are: engaging in research that helps the researchers gain valuable experience in scientific and reliable ways of searching for new knowledge and truth; it provides a unique opportunity to test and challenge the existing knowledge, build on it and come up with new knowledge; it finds solutions to problems faced by the living beings; it offers new vistas to life and lifestyles; it provides leads for further explorations and investigations; it affords the ground for testing, sharpening and honing one's own results and recommendations; it improves the standing of the researchers and the institution to which they belong.

I take this opportunity to congratulate all the Paper and Poster Presenters, the Dean and other members of the Organizing Committee of the Faculty of Humanities and Sciences on their dedicated guidance and commitment in organizing SICASH and convey my best wishes for a successful and fruitful engagement of great minds.

**Prof. N. Selvakkumaran**

Head

School of Law

## **SICASH 2020 - Programme**

**26<sup>th</sup> March 2021**

- 09.00 a.m. - National Anthem
- 09.05 a.m. - Traditional lighting of the Oil Lamp
- 09.10 a.m. - Welcome Address by General Chair - Dr. Malitha Wijesundara
- 09.15 a.m. - SICASH Video Presentation
- 09.20 a.m. - Address by Co-Chair - Prof. Sriyani E. Peiris
- 09.25 a.m. - Address by the Vice-Chancellor of SLIIT- Prof. Lalith Gamage
- 09.35 a.m. - Address by the Chief Guest  
Prof. Kapila Perera - Secretary Ministry of Education
- 09.45 a.m. - Keynote Speech 01  
Prof. Michael G K Jones, Murdoch University, Australia
- 10.05 a.m. - Keynote Speech 02  
Dr. K. Kanag-Isvaran, President's Counsel
- 10.30 a.m. - Parallel Technical Sessions
- 1.15 p.m. - Announcement of Awards
- 1.30 p.m. - Vote of thanks by Co-Chair - Prof. N. Selvakkumaran

## SICASH 2020 - Natural Sciences – Session I

#	Field	Title of the Paper	Name of the Author/s	Page Number
1	Natural Science	Effect of 1-Methylcyclopropene and Wrapping Material on Shelf-Life and Postharvest Qualities of Spine Gourd ( <i>Momordica Dioica</i> )	Wijesinghe, G.P.M, Kumara, G.D.K , Kumara, J.B.D.A.P	1
2	Natural Science	Impact of Spacing and Type of planting material on Dry Matter Percentage in Cinnamon Bark; at the stage of first Harvest	Aluthgamege, H. N., Fonseka, D. L. C. K., Benaragama, C. K., Kumarasinghe, H. K. M. S.	7
3	Natural Science	Newly Introduced Creeper Legume <i>Vigna Marina</i> as A Solution for Protection of Road Cuts In Sri Lanka	De Silva, M.H.S.C,Yapa, P.I. and Mahatantile,W.D.K.	13
4	Natural Science	Phenotypic Plasticity Index as A Tool to Assess the Suitability of Three <i>Coleus</i> ( <i>Plectranthus scutellarioides</i> (L.) R.Br.) Varieties in Low-Maintenance Landscaping	Kodithuwakkuge, V. N., Padmaperuma, O. A. D., Gunathilake, G. K. D. C. S., Liyanage, L. P. H., Krishnarajah S. A. and Beneragama, C. K.	19
5	Natural Science	Multilocational Evaluation of Growth and Antioxident Content of Curly Kale ( <i>Brassica oleracea</i> L. var <i>acephala</i> ) and Chinese Kale ( <i>Brassica oleracea</i> var. <i>alboglabra</i> ) in Sri Lanka	Jayasooriya, R. Y, Chamara, R.M.S.R , Gunathilake, G.K.D.C.S., Liyanage, L.P.H. and Beneragama, C.K.	26
6	Natural Science	Electrochemical Evaluation of Delayed Release Behaviour of Diclofenac Sodium Tablets	Sewwandi, A.A.M., Soysa, H. Sasimali M.	34
7	Natural Science	Growth Parameters and Grain Yield of Rice ( <i>Oryza Sativa</i> L.) as Affected by Biofilm Biofertilizer Application	Ketipearachchi, K.G, ,Seneviratne, G., and D.L.C.K. Fonseka	40
8	Natural Science	Case Study on Safety Culture in Chemical Laboratories in Western Province, Sri Lanka	Samaranayake, A.D.A.I., Nishadya, S.M.S. and Jayasundara, U.K.	44
9	Natural Science	Zno Nanoparticles Deposited on Gamboge ( <i>Garcinia Gummi-Gutta</i> L.) Based Activated Carbon for Removal of Phenol from Synthetic Wastewater	Nadeeshani, M.LN. and Edussuriya, M.	50
10	Natural Science	The Use of Colour Shade Material in Black Pepper ( <i>Piper Nigrum</i> L) Propagation	Jayasinghe, J.A.T.U., Wickramanayake, D.S.D.S. <sup>1</sup> , and Kirthisinghe, J.P.	56

## SICASH 2020 - Natural Sciences – Session II

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1	Natural Science	Identification of SNP-Allelic Polymorphism Based Changes in Two Salt Responsive Proteins, Na <sup>+</sup> H <sup>+</sup> ANTIPTER 4 and GLUTAREDOXIN 24 Between Two Rice Varieties	Abhayawickrama, B.P., Hanchapola, C.R., Kottearachchi, N.S., and Gimhani, D.R.	61
2	Natural Science	Molecular Phylogeny of Rasboroides (Family Cyprinidae): An Endemic Freshwater Fish Species in Sri Lanka	Lankika, S.P.C. and Herath, V.	66
3	Natural Science	Review on Methods of Explant Surface Sterilization for Efficient Micropropagation	Hemathilake, H.M. and Peiris, S.E.	76
4	Natural Science	Effects of Silver Nitrate in In Vitro Establishment of <i>Cordyline Fruticosa</i> (L.) CV 'Purple Compacta Tri Colour' with CSUP Media Sterilization	Peiris, S.E., Hemathilaka, Heshika and Peiris, Colin N., Wijerathna, A.W.	83
5	Natural Science	In Vitro Root Induction and Acclimatization of <i>Cissampelos pareira</i> : An Important Medicinal Plant	De Silva, D.C.M and Fonseka,D.L.C.K.	89
6	Natural Science	Callus Induction Protocol for <i>Aegle Marmelos</i> (L.) Corr. (Beli) through Seeds Explants	Hansani, S.A.N.P. ,Fonseka, D.L.C. K.,	93
7	Natural Science	Improvement of the Survival Rate of In Vitro Propagated <i>Dendrobium</i> Intermediate CV 'White' during Acclimatization	Isaac, P.N. and Peiris, S.E.	98
8	Natural Science	Production of Disease Free <i>Rumohra Adiantiformis</i> (Leatherleaf Fern) Using In Vitro Propagation	Perera, D. and Peiris, S.E.	105
9	Natural Science	An Efficient Plant Regeneration using Leaf Explant for <i>Osbeckia Octandra</i> (L.) DC; A Valuable Medicinal and Ornamental Plant	Dilrukshi S. K. Nagahatenna and Sriyani E. Peiris	111

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1	English & Literature	A Study on the Impact of Online Monolingual and Bilingual Dictionary Use on ESL Learners' Vocabulary Acquisition and Retention	Wijesuriya, Keshani, and Dissanayake, Sucheru, D.M.M.	118
2	English & Literature	Incorporating A Task-Based Approach to Motivate Speaking in The General English Classroom	Rathnasena, Upeksha	124
3	English & Literature	Effectiveness of L2 Grammar Videos: A Dialogue between Teachers and Learners	Kalinga, J.	129
4	English & Literature	Property, Sustainability and Well-Being: The Perspectives of the American Colonizers and the Natives in William Faulkner's Go Down, Moses	Jayasinghe, M.K.	140
5	English & Literature	Lessons Learnt: A Study of Student Feedback Regarding Online Proficiency Assessment	Rathnasena, U. and Kalinga, J.	146
6	English & Literature	Sustainability in the Face of Adversity – In Nathaniel Hawthorne's the Scarlet Letter	Jayasinghe, M.K.	156
7	Education	Perception of Postgraduate Students on Emergency Remote Teaching (ERT) During the COVID-19 Lock-Down: A Cohort Study in a Public University in Sri Lanka	Beneragama, C.K., Pieris, B.C.N., and Pieris, S.E.	162
8	Education	The Public Primary School Teachers' Perception of Integrating Information and Communication Technology for Teaching & Learning in the Zonal Education of Colombo, Sri Lanka	Bukhari, S. K.1, Peiris, Colin N, Thelijjakoda, Samantha2, Dr. Nawinna, D. P., Wijekoon, W.M.J.L	170
9	Education	Examining the Mode of Teaching English as a Second Language in Gampaha District Non-Urban Government Schools of Sri Lanka	Rajapakse, R.W.D.N.K.	178
10	Education	Design of A Framework for Professional Development Programs for Teachers in the Use of Interactive Touch Screen	Perera, K.G.S.K., Wijesundera, Malitha. and Siriwardhena, Indrani.	184
11	Education	Attitude of the Students Towards the Usage of Group Activities as a Remedy for Speaking Anxiety	Peiris, Ashani Erandi	190

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