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Annual Science Research Sessions

2025

Next-Gen Solutions: Bridging Science and Sustainability

PROCEEDINGS

**Biological Sciences
Chemical Sciences
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**Faculty of Applied Sciences
South Eastern University of Sri Lanka**



**FACULTY OF APPLIED SCIENCES
SOUTH EASTERN UNIVERSITY OF SRI LANKA**

**CONFERENCE PROCEEDINGS
of
14th Annual Science Research Sessions - 2025**

“NEXT-GEN SOLUTIONS: Bridging Science and Sustainability”

30th of October 2025

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MESSAGE FROM THE VICE CHANCELLOR



It gives me great pleasure to convey this message for the 14th Annual Science Research Sessions (ASRS 2025) organized by the Faculty of Applied Sciences. I extend my warm greetings to the organizing committee, distinguished guests, researchers, and scholars for their valuable contributions to this academic event.

The ASRS has evolved into a hallmark event of our University, providing a platform for researchers, academics, and students to present their findings, exchange ideas, and foster collaboration. This year's theme, "NEXT-GEN SOLUTIONS: Bridging Science and Sustainability," highlights the importance of aligning scientific innovation with sustainable development to address emerging global challenges.

I commend the organizing committee for their commitment and efforts in coordinating this event. Their dedication to promoting research, innovation, and knowledge creation aligns closely with the vision and mission of the Faculty and the University in advancing science for national development.

I also take this opportunity to congratulate all contributors and participants of ASRS 2025. I am confident that the research shared through this forum will inspire further inquiry and contribute meaningfully to the advancement of science and technology in the country.

I wish the event every success.

Prof. S. M. Junaideen

Vice Chancellor,

South Eastern University of Sri Lanka,

Oluvil.

MESSAGE FROM THE CONFERENCE CHAIRPERSON



It is with great pleasure that I convey my heartfelt greetings to all participants, contributors, and organizers of the Annual Science Research Sessions (ASRS) 2025. This prestigious annual event stands as a testament to our faculty's unwavering dedication to nurturing a vibrant culture of research, innovation, and intellectual growth.

The theme for this year, "*Next-Gen Solutions: Bridging Science and Sustainability*," aptly captures the essence of our collective journey toward shaping a future where scientific advancement and sustainable development coexist in harmony. As global challenges such as climate change, resource depletion, and technological disruption intensify, the role of applied science becomes ever more crucial in providing creative, evidence-based, and forward-thinking solutions.

The ASRS 2025 provides an invaluable platform for our students, academics, and researchers to present their findings, exchange knowledge, and engage in meaningful discussions that transcend disciplinary boundaries. It is through such interactions that innovative ideas are born - ideas that have the power to influence policy, drive technological progress, and enhance the quality of human life.

I am deeply impressed by the diversity and quality of research represented in this year's symposium. The enthusiasm and commitment shown by our young researchers are truly commendable, as they embody the spirit of inquiry and responsibility that the world needs most today. I also extend my sincere appreciation to the organizing committee, reviewers, coordinators, and all staff members who have contributed their time and effort to make this event a resounding success.

As we publish these Abstract Proceedings, may they serve as a beacon of inspiration to future researchers and a reflection of our Faculty's pursuit of excellence in applied sciences. Let us continue to foster collaboration, curiosity, and creativity — the true cornerstones of sustainable scientific progress.

I wish the ASRS 2025 every success and hope it will continue to inspire innovation, encourage critical thinking, and strengthen our shared commitment to building a sustainable future through science and technology.

Prof. (Dr.) H. M. M. Naleer

Dean,

Faculty of Applied Sciences, South
Eastern University of Sri Lanka.

MESSAGE FROM THE CONFERENCE COORDINATOR



I am deeply honoured to extend my warmest greetings to all participants of the 14th Annual Science Research Session (ASRS 2025), organized by the Faculty of applied Sciences, South Eastern University of Sri Lanka.

As the coordinator of ASRS 2025, I am privileged to lead the organization of this multidisciplinary research event under the theme “Next-Gen Solutions: Bridging Science and Sustainability”. The ASRS 2025 encompasses a wide range of disciplines including Biological Sciences, Chemical Sciences, Computer Science and Information Technology, Environmental Sciences, Mathematics and Statistics, Agricultural Sciences, and Physical Sciences, reflecting the multidisciplinary and integrative nature of modern scientific research within the Faculty.

The ASRS 2025 received 66 extended abstracts from higher education and research institutions across Sri Lanka. Following a comprehensive review process by an expert panel comprising internal and external reviewers, 58 abstracts were selected for publication in this abstract book. The Faculty takes pride in ensuring the academic quality and integrity of each accepted contribution, which collectively reflect the depth and diversity of current scientific research.

The successful realization of ASRS 2025 is the outcome of the collective endeavour, academic dedication, and organizational excellence demonstrated by all contributors. In my capacity as Coordinator, I express sincere appreciation to the Organizing Committee, Reviewers, Session Chairs, and the academic and non-academic staff of the Faculty for their unwavering commitment, professionalism, and continued support throughout the planning and execution of this event.

Finally, I convey my sincere congratulations to all authors and presenters for their valuable scholarly contributions. It is my expectation that the outcomes of **ASRS 2025** will inspire innovation, strengthen research collaborations, and make a meaningful contribution to the advancement of science and sustainable development.

Dr. M. A. C. Mohamed Haniffa

Coordinator/ASRS-2025,
Faculty of Applied Sciences,
South Eastern University of Sri Lanka,
Sammanthurai.

A BRIEF BIOGRAPHY OF THE KEYNOTE SPEAKER



Dr. Hanifa Mohamed Nasir

Department of Mathematics, College of Science, Sultan Qaboos University, Sultanate of Oman

Dr. Hanifa Mohamed Nasir is a renowned mathematician and academic with extensive experience in applied and computational mathematics. He obtained his Ph.D. from the University of Electro-Communications, Tokyo, Japan, specializing in mixed-type finite element methods for radiation and scattering problems with applications to structural–acoustic coupling in unbounded regions. His pioneering work in numerical analysis and finite element modeling has contributed significantly to the fields of engineering and applied sciences.

Throughout his career, Professor Nasir has held several academic and administrative positions, including Senior Lecturer and Head of the Department of Mathematics at the University of Peradeniya, Sri Lanka, and Visiting Consultant at the Department of Mathematics and Statistics, Sultan Qaboos University, Oman. He has supervised numerous undergraduate and postgraduate research projects and has played a key role in curriculum development and academic consultancy for several universities.

Dr. Nasir has published extensively in peer-reviewed journals and has delivered invited lectures at international conferences in Japan, India, Oman, and Sri Lanka. His research interests include finite element analysis, spherical harmonics, harmonic analysis in higher-dimensional spaces, fractional calculus, and high-performance numerical computing.

He is an active member of several professional organizations, including the Society for Industrial and Applied Mathematics (SIAM), the Japan Society for Industrial and Applied Mathematics (JSIAM), and the European Mathematical Society (EMS). Professor Nasir's distinguished career reflects his dedication to advancing mathematical research and higher education globally.

TABLE OF CONTENT

	Page No.
Editorial Board	i
Organizing Committee	i
List of external reviewers	ii
List of internal reviewers	iv
Message from the Vice Chancellor	vi
Message from the Dean	vii
Message from the Coordinator	viii
A brief biography of the keynote speaker	ix
 <i>Biological Sciences</i>	
1. EVALUATION OF BOTANICAL LARVICIDES FOR MANAGING <i>Cnaphalocrocis medinalis</i> INFESTATIONS IN RICE FIELDS <i>A. S. S. Jahan, V. Sujarajini, M. H. Haroon, and A. L. M. Fairoje</i>	1
2. MORPHOLOGICAL VARIATIONS OF <i>Pleurotus ostreatus</i> COMMERCIALY GROWN IN SRI LANKA <i>W. A. R. Fernando, W. J. A. B. N. Jayasuriya, H. M. D. R. Herath, and A. H. Ekanayake</i>	2
3. TAXONOMIC ASSESSMENT AND A DICHOTOMOUS KEY FOR THE IDENTIFICATION OF FIVE SRI LANKAN WILD RICE SPECIES (<i>Oryza spp.</i>) WITH MORPHOLOGICAL AND ECOLOGICAL INSIGHTS <i>S. Thasajini, Malaka M. Wijayasinghe, and K. M. G. Gehan Jayasuriya</i>	3
4. EFFECT OF PROLONGED DROUGHT FOLLOWED BY REWETTING ON SOIL NUTRIENT DYNAMICS <i>S. M. M. P. K. Seneviratne</i>	4
5. EXPLORING ALTERNATIVE CULTURE MEDIA AND pH INFLUENCE FOR ENHANCED BACTERIAL CELLULOSE PRODUCTION <i>A. M. L. S. Bandara and E. M. J. M. Rizvi</i>	5
6. EXPLORING TAXONOMIC AWARENESS AND RESEARCH GAPS IN WILD RICE (<i>Oryza</i>) SPECIES OF SRI LANKA: A CASE STUDY APPROACH <i>S. Thasajini, Malaka M. Wijayasinghe, and K. M. G. Gehan Jayasuriya</i>	6
7. PRODUCTION, PURIFICATION, & CHARACTERIZATION OF α -AMYLASE FROM CASSAVA (<i>Manihot esculenta</i>) PEELS BY USING <i>Aspergillus niger</i> , <i>Aspergillus flavus</i> , and <i>Bacillus subtilis</i> <i>M. H. Aaysha Farvin and M. I. S. Safeena</i>	7
8. EVALUATION OF PLANT EXTRACTS ON THE SUPPRESSION OF <i>Colletotrichum gloeosporioides</i> CAUSING ANTHRACNOSE DISEASE IN PAPAYA <i>R. D. W. M. W. P. Lankachandra and M. I. S. Safeena</i>	8

9. IN VIVO AND IN VITRO POTENTIAL OF *Moringa oleifera* LEAF EXTRACT TO RETARD POST-HARVEST DECAY OF TOMATO 9
A. M. S. Sithara and M. I. S. Safeena
10. DEVELOPMENTAL AND BIOCHEMICAL DISRUPTIONS TRIGGERED BY TRACE LEAD EXPOSURES IN ZEBRAFISH (*Danio rerio*) EMBRYOS AND LARVAE 10
I. B. K. Thomas, S. Fernando, M. R. Abeykoon, C. D. Jayasinghe, D. T. Abeyasinghe and R. Senthilnithy
11. PRELIMINARY INVENTORY OF MOSQUITO DIVERSITY IN THE KALMUNAI REGION AND FACULTY OF APPLIED SCIENCES, SEUSL 12
S. Thadsana and W. S. Udayakantha
12. SEED GERMINATION RESPONSES OF SRI LANKAN WILD RICE SPECIES (*Oryza nivara* AND *Oryza rhizomatis*) UNDER DRYING AND FLOOD CONDITIONS 13
S. Thasajini, Andrea Mondoni, Malaka M. Wijayasinghe, and K. M. G. Gehan Jayasuriya
13. ANT (HYMENOPTERA, FORMICIDAE) DIVERSITY ACROSS FOUR SELECTED HABITATS IN BATTICALOA DISTRICT, SRI LANKA 14
S. Hansamali, M. Vinobaba, and W. S. Udayakantha

Chemical Sciences

14. SYNTHESIS OF ARYL DIETHERS AND DIAMINES VIA C-X (X = O, N) ULLMANN CROSS-COUPLING OF 1,4-DIBROMOBENZENE 15
D. D. Lekamge and I. R. Fernando
15. COMPUTATIONAL ANALYSIS OF AROMATIC THIOMORPHOLINE BORANE AS A HYDROGEN STORAGE MATERIAL 16
S. K. J. S. Thilakasiri and A. B. F. Rifana
16. INVESTIGATION OF RHODAMINE B PERCENTAGE IN MARKET FOOD PRODUCTS USING SPECTROPHOTOMETRIC ANALYSIS 17
K. D. W. H. N. D. C. P. Diwarathna and M. A. C. M. Haniffa
17. ENHANCED PHOTOCATALYTIC DEGRADATION OF ORGANIC POLLUTANTS USING Fe₂O₃-TiO₂ COMPOSITES 18
R. M. N. L. Rathnayake and M. A. C. M. Haniffa

Computer Sciences and IT

18. IOT AND MACHINE LEARNING-BASED PERSONALIZED HUMAN ACCIDENT DETECTION AND TRACKING SYSTEM 19
D. S. N. Seram, W. Ahamed, I. Javid, N. S. Lankasena, H. M. S. C. R. Heenkenda and M. I. F. Amna

19. SURFACE ELECTROMYOGRAPHY-BASED RECOGNITION OF SINHALA HANDWRITTEN CHARACTERS USING MACHINE LEARNING 20
B. M. Seneviratne, B. N. S. Lankasena, and I. Jayarathne
20. PARALLEL CNN+BILSTM WITH FEATURE FUSION FOR ROBUST AIR-WRITING RECOGNITION 21
B. A. D. D. Harshana, B. N. S. Lankasena, and Isuru Jayarathne
21. DIABETIC RETINOPATHY DETECTION: CUSTOM CNN ARCHITECTURE WITH REGULARIZATION AND DATA AUGMENTATION FOR IMPROVED GENERALIZATION AND EFFICIENCY 22
K. R. Hewapathirana and H. M. M. Naleer
22. VOICE ASSISTED REAL TIME TRAFFIC SIGN DETECTION AND RECOGNITION SYSTEM UNDER ADVERSE ENVIRONMENTAL CONDITIONS BASED ON YOLOV8 23
P. H. S. Kumari and H. M. M. Naleer
23. FIELD IMAGING CONSTRAINTS AND AI MODEL READINESS FOR EARLY DETECTION OF RICE LEAF FOLDER INFESTATION IN SRI LANKAN PADDY FIELDS 24
J. Janarthanan, G. Mikunthan, S. R. Liyanage, and S. Tharaga
24. AN ONTOLOGY-DRIVEN CLOUD-BASED FRAMEWORK TO ENHANCE ELECTRONIC HEALTH RECORD (EHR) INTEGRATION IN SRI LANKA 25
K. D. T. Rangana
25. MACHINE LEARNING-BASED EEG CHARACTERIZATION OF COGNITIVE AND MEDITATIVE STATES IN UNIVERSITY STUDENTS 26
M. H. Paul, B. N. S Lankasena, and I. Jayarathne
26. ANALYZING TRENDS AND DETERMINANTS OF EMPLOYEE ABSENTEEISM IN THE APPAREL MANUFACTURING SECTOR 27
S. P. Y. S Sasmika, A. S. A Jayarathne, N. D. T. V Nawagamuwa, P. T. G. S. T. Thawalpitiya, and S. M. M. Lakmali
27. WILDLIFE ANIMAL DETECTION USING YOLOv11 FOR MITIGATING HUMAN WILDLIFE CONFLICT 28
L. Ahamed Musanik and A. L. Hanees
28. CROWD ANOMALY DETECTION IN SURVEILLANCE VIDEOS USING HYBRID MODELS OF AUTOENCODER, GAN AND YOLOv8 29
S. Vishvapathy and M. A. C. Akmal Jahan

Environmental Sciences

29. VEGETATION STRUCTURE AND COMPOSITION OF BEDDAGANA WETLAND SANCTUARY: ECOLOGICAL INSIGHTS FROM AN URBAN WETLAND IN SRI LANKA 30
I. K. Hettiarachchi, S. M. M. P. K. Seneviratne, and B. D. Madurapperuma
30. SPATIOTEMPORAL ASSESSMENT OF *Escherichia coli* AND TOTAL COLIFORMS IN COASTAL RECREATIONAL WATERS: INSIGHTS FROM ARUGAM BAY AND PASIKUDA BEACHES IN EASTERN, SRI LANKA 31
M. F. Nawas, J. Sansitha, M. V. F. Mirfath, and A. L. M. Fairoje
31. COMPARATIVE STUDY OF FRESHWATER AND MARINE WATER QUALITY AT PASIKUDA BEACH SITE 32
S. H. J. N. Ashirwadani, M. F. Nawas, and A. L. M. Fairoje
32. SOIL NUTRIENT DYNAMICS IN THE KADOLKELE MANGROVE RESERVE, NEGOMBO, SRI LANKA 33
M. H. S. Udeshini, S. M. M. P. K. Seneviratne, and B. D. Madurapperuma
33. ASSESSMENT OF HYDROLOGIC PERFORMANCE IN UNDULATING CATCHMENT: CASE STUDY OF THE UPPER MAHAWELI CATCHMENT, SRI LANKA 34
W. M. N. B. K. Weerakoon, G. Naveendrakumar, A. E. S. Patrick, and M. E. Sutharsan

Mathematics and Statistics

34. PREDICTING THE URBAN FLOOD RISK FOR THE KELANI RIVER BASIN 35
N. D. R. Perera, U. P. Liyanage, K. K. W. H. Erandi, and S. S. N. Perera
35. NOVEL MODIFIED TOPOLOGICAL INDICES OF ANTI-CANCER DRUGS 36
W. H. S. M. Ranasingha, K. M. J. I. B. Senaratna, M. A. A. M. Faham, G. J. Lanel, and D. C. Gunawardhana
36. LAGRANGE'S INTERPOLATION TECHNIQUE FOR ANALYSING STUDENTS' ACHIEVEMENT IN A UNIVERSITY LEVEL COURSE: A PRELIMINARY STUDY 37
A. N. Wazeetha Mazari and M. A. A. M. Faham
37. REHAN-LANEL INDICES OF ANTI-TUBERCULOSIS DRUGS 38
D. C. Gunawardhana, A. M. F. S. Sino, K. Moulis, K. K. K. R. Perera, and G. J. Lanel

38. REVAN TOPOLOGICAL INDICES OF SUPRAMOLECULAR FUSHINE ACID USEFUL IN MEDICAL APPLICATIONS 39
D. C. Gunawardhana, A. M. F. S. Sino, K. Moulis, K. K. K. R. Perera, and G. J. Lanel
39. DEGREE-BASED TOPOLOGICAL INDICES OF LEPROSY DRUGS USING THE *M*-POLYNOMIAL APPROACH 40
D. C. Gunawardhana, G. J. Lanel, and M. G. N. Lakshani
40. A TIMETABLE SCHEDULING USING THE GRAPH COLORING APPROACH 41
P. Jinomitha and Y. Raviraj
41. CLASSES OF EXACT EINSTEIN- MAXWELL SOLUTIONS WITH PRESSURE ANISOTROPY 42
J. S. Manodya Hasanganee and K. Komathiraj
42. EXACT SOLUTIONS FOR ANISOTROPIC CHARGED PERFECT FLUID SPHERES IN GENERAL RELATIVITY 43
H. H. N. D. Kumari and K. Komathiraj
43. COMPARATIVE ANALYSIS OF PRIM AND DIJKSTRA ALGORITHMS IN SHORTEST PATH PROBLEMS 44
M. F. F. Seema Akther and Y. Raviraj
44. THE ROLES OF GENETIC, CHILDHOOD MALTREATMENT, AND IMPULSIVITY IN CRIMINAL BEHAVIOUR OF SRI LANKAN MALE CONVICTS 45
M. R. Abeykoon, C. D. Jayasinghe, R. J. Illeperuma, I. B. K. Thomas and D. T. Abeysinghe
45. TIME SERIES MODELING AND FORECASTING OF PADDY PRODUCTION IN SRI LANKA'S MAHA AND YALA SEASONS 47
R. M. D. K. Rathnayaka and M. C. Alibuhitto
46. MACROECONOMIC DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN SRI LANKA: EVIDENCE FROM AN ARDL APPROACH 48
M. C. Alibuhitto
47. AN ASSESSMENT OF HEALTH AND WELL-BEING AMONG UNDERGRADUATE STUDENTS: A STUDY AT THE FACULTY OF APPLIED SCIENCES, SOUTH EASTERN UNIVERSITY OF SRI LANKA 49
L. E. T. R. De Silva and A. M. Razmy

Physical Sciences

48. FUNCTIONALIZED GRAPHENE OXIDE – BASED DETECTOR FOR HEAVY METALS 50
M. W. C. S. Perera and T. Jaseetharan
49. EXPLORING THE POTENTIAL OF COCONUT SHELL CHARCOAL IN CEMENT-BASED SUPERCAPACITOR FABRICATION 51
M. P. D. Sandaruwan, M. A. Farhana, and M. J. M. Jafeen
50. PERFORMANCE ANALYSIS OF A SILVER AND GRAPHITE COATED GALLIUM ARSENIDE (GaAs) MOSFET 52
A. L. Noor Najaa, M. J. M. Jafeen, and U. L. M. Althaf
51. ENHANCING THE PERFORMANCE OF GEL POLYMER ELECTROLYTE BY MIXED CATION EFFECT FOR Zn - METAL ION BATTERIES 53
S. M. M. S. Rojeena and T. Jaseetharan
52. SOLID STATE DOUBLE LAYER CAPACITOR WITH EFFICIENT NATURAL GRAPHITE AND COCONUT SHELL CHARCOAL COMPOSITE ELECTRODES 54
M. M. F. Afrija, U. L. Zainudeen, and A. R. Najitha
53. A CUSTOM PYTHON SCRIPT FOR AUTOMATED TRACKING OF LOCOMOTOR ACTIVITY IN AMPHIBIAN LARVAE 55
H. T. D Rajapaksha, B. M. Dissanayake, W. A. G. K. Wickramasinghe, and N. U. K. Pathirana
54. ASSESSING URBAN HEAT ISLAND DYNAMICS IN SOUTHEASTERN REGION OF SRI LANKA USING LANDSAT-8/9 AND GIS (2019–2025) 56
U. S. D. Fernando and U. L. Zainudeen

Agricultural Sciences

55. EVALUATION OF CUTTING TYPES AND PROPAGATOR SYSTEMS FOR RAPID VEGETATIVE PROPAGATION OF CARAMBOLA (*Averrhoa carambola*) IN SRI LANKA 57
D. S. B. Ratnayake
56. OPTIMIZATION OF GROWING CONDITIONS TO ENHANCE THE GROWTH PERFORMANCE OF MUNG BEAN MICROGREENS 58
S. A. R. K. Gunawardhana, I. G. H. I. Jayakody, M. P. M Arachchige, and U. G. A. T. Premathilake
57. ASSESSING THE FERTILIZER EFFECT OF THE INVASIVE SPECIES, *Prosopis juliflora* EXTRACTION ON GROWTH OF COWPEA (*Vigna unguiculata*) 59
Y. R. S. A. Premawardana and Y. R. G. T. Premawardana