30th OCT 2025

14th Annual Science Research Sessions 2025

Next-Gen Solutions: Bridging Science and Sustainability

PROCEEDINGS

Biological Sciences
Chemical Sciences
Computer Sciences & IT
Environmental Sciences
Mathematics & Statistics
Physical Sciences
Agricultural Sciences
Science Education

Faculty of Applied Sciences
South Eastern University of Sri Lanka

FACULTY OF APPLIED SCIENCES

SOUTH EASTERN UNIVERSITY OF SRI LANKA

CONFERENCE PROCEEDINGS

of

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"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.

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