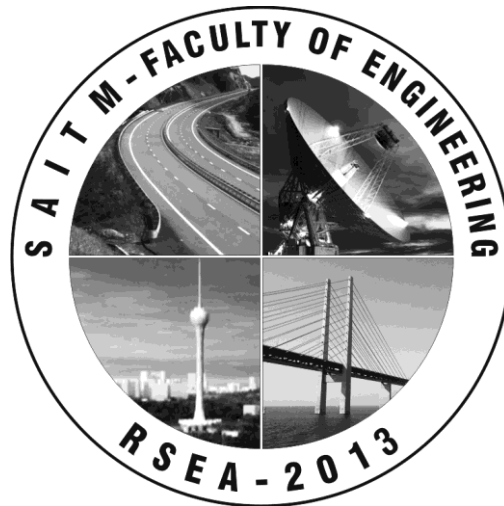


Proceedings of the SAIM Research Symposium on

# Engineering Advancements

## SAITM – RSEA 2013

27<sup>th</sup> April, 2013



### Faculty of Engineering

South Asian Institute of Technology and Medicine [SAITM]

P. O. Box 11, Millennium Drive,

Off Chandrika Kumaratunga Mawatha, Malabe, Sri Lanka.

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**ISBN 978-955-0638-02-4**

## Message from the Chairman

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**Prof. Neville Fernando** MBBS (Ceylon)

President / Chairman

South Asian Institute of Technology and Medicine [SAITM]



It is with a sense of pride that I announce SAIMT – The Green Campus, the first multi-faculty institution in tertiary education is fast progressing and establishing itself as the leading seat of higher education from the non-state sector in Sri Lanka.

SAITM faculty of engineering offering B.Sc. Eng. Degree courses in many fields of specialization in affiliation with one of the leading research based universities in the world – Asian Institute of Technology (AIT), Thailand, since its establishment in 2009 has been leading in many innovative and pioneering efforts and has shown tremendous promise and growth.

With more than 400 students enrolled under its wings over the last 3 years, faculty of engineering has already established itself as the best alternative for those students seeking higher education in engineering saving a vast amount of foreign exchange to the country. With the first batch of our engineering graduates due to pass out from AIT shortly I am certain a new chapter in engineering profession in Sri Lanka will begin gifting the fruits of our efforts to the nation.

# Message from the Dean, Faculty of Engineering

**Dr. Sisuru Sendanayake** BSc. Eng (Hons) MSc PhD (Moratuwa)

Dean, Faculty of Engineering

South Asian Institute of Technology and Medicine [SAITM]



SAITM Research Symposium on Engineering Advancements (RSEA) organized by the faculty of Engineering is its window to the world. Acknowledging research along with teaching and training as one of the three principal branches of successful education in engineering, RSEA is organized as an annual event is the premier event of the academic calendar of the faculty conducted with the participation of academics researchers, students and a wide spectrum of participants from the industry and the higher education sector in Sri Lanka and abroad.

Inaugurated as a pioneering effort from the non-state sector higher education institutions in Engineering in Sri Lanka, SAITM RSEA has shown tremendous growth and success in terms of content and quality over the years and has become a noticeable event among the engineering fraternity.

Affiliated to the Asian Institute of Technology, Thailand -one of the premier post graduate institutions in engineering, SAITM faculty of engineering views this international research symposium as a vehicle to give the much needed exposure and opportunity to our undergraduates in honing their skills in engineering research while providing a forum and a fertile ground to develop a network among various stake holders in engineering in Sri Lanka, from academic sector as well as the industry to share and advance knowledge.

Already, the fruits of earlier versions of SAITM RSEA are evident and I am sure the country will begin reaping the benefits in the very near future in the form of highly skilled, world class engineering graduates who will commence serving the world.

Special appreciation should go to Dr. Nandika Miguntanna, Head of the organizing committee SAITM RSEA and to all our academic staff, partner organizations and students for their untiring efforts and dedication, contributing immensely to the success of the event.

## Message from the Editor

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**Dr. N. P. Miguntanna** BSc. Eng (Hons)(Peradeniya), PhD(QUT)

Head - Civil Engineering Research

South Asian Institute of Technology and Medicine [SAITM]

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Dear participants, authors and members of the program committee,

With great pleasure I welcome you all to the “SAITM- Third Annual Research Symposium on Engineering Advancements – RSEA 2013” which is truly a remarkable event uniquely organized by the SAITM Faculty of Engineering.

Today the world is embraced with rapid change of the facets of science, technology and engineering. However, the question is “how to utilize them for the benefit of the global community and the environment while achieving the concepts of sustainable development?” In this context, an efficient and effective way to share the knowledge and discuss the technological and scientific challenges, practical barriers, theoretical developments and their applications and limitations is of crucial importance.

SAITM RSEA aims to provide a multinational and multi disciplinary platform where the latest trends of science and technology, research and innovation can be presented, discussed and shared in a friendly environment with the aim of learning from each other and technical networking. This premier event brings together diverse groups of researchers and practitioners from academia, industry and government, who are interested in the emerging fields of engineering ranging from the design and construction of infrastructure, information technology and telecommunication, energy and environment, bio systems and food technology , urban management, town planning, to project management.

We solicited papers that present recent results, as well as more speculative presentations that discuss research challenges, define new applications and propose new designs and methodologies for evaluating and implementing in order to provide a roadmap for accomplishing engineering advancements for the benefit of global community and environment while making the sustainable development a practical reality. Each submission was subjected to a minimum of one peer review by an expert in the field as a part of a double blind review process. Notably, RSEA 2013 is blessed with three renowned keynote speakers, Prof. M.P Ranaweera, Prof. Janaka Ekanayake, Prof. Abdul Salam.

I take this opportunity to thank the main sponsor of the symposium CATIC group and co sponsors of the event. I would also like to thank the members of the expert committee, review panel and the organizing committee of RSEA 2013 for their untiring dedication and commitment.

I wish each of you successful deliberations, stimulating discussions, new friendships and finally a rewarding experience both technically and socially. I look forward to seeing you at the RSEA 2013.

## **SAITM RSEA 2013 - Programme Committee**

- Dr. S. Sendanayake
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