



President's Message

Prof. S. Gopalakrishnan

On July 29, 2017, Prof. A Selvarajan, one of the most revered and respected leaders of smart material and structures community in our country, breathed his last. His death is indeed a huge loss to the smart material and structures community in general and ISSS in particular. He is one of the tallest leaders in India and his contributions in the area of fiber optic sensors and Micro-Optical –Electro Mechanical Systems (MOEMS) are outstanding which has resulted in significant advancements in the country. He is one of the founders of ISSS and has constantly guided the society in its functioning. In the initial years of ISSS, he started the BFAST lecture series every second Saturday held at IISc, Bangalore and the entire smart material community was eagerly looking forward to this lecture series. He was instrumental in organizing the first Structural Health Monitoring (SHM) workshop during the 1999 ISSS International Conference, held for the first time in India, where he was able to bring in some of the best researchers in this area such as F.K Chang, Christian Boller and W.J.Staszewski to Bangalore. This workshop triggered major research in this area in India and today

some of the Indian Institutes such as IISc and IIT-M are rated among the best places in the world for their contributions to research in the area of SHM. He was also one of the editors of the only monograph on the subject brought out by ISSS.

Prof. Selavarajan played a crucial role in the formation of two national programs namely, the National Programme for Smart Materials (NPSM) and National Programme on Micro and Smart Systems (NPMASS). In fact, Prof. Selvarajan was instrumental in coining the name for the second programme NPMASS and contributed to developing its final proposal. I have personally seen him actively engaged in many B-SMART meetings and provided many insightful inputs for a number of different projects. He is one of the most affable and easily approachable person. In his death, ISSS has lost one of the most respected leaders and the Society will not be the same without him. ISSS will strive to follow his guidance and advice in running the Society in the years to come. On behalf of all the members of ISSS and my own personal behalf, I pray for his soul to rest in peace.

No amount of praise is sufficient nor there are any adjectives to adequately describe the services of Prof. Selvarajan to ISSS. In order to highlight and honor Prof. Selvarajan's contribution to ISSS, the Governing Council of ISSS in its recent meeting, instituted a memorial lecture in his name to be given by an eminent research from the country or abroad every year prior to AGM of the society. I am happy to inform that the first Prof. Selvarajan's Memorial Lecture will be on September 27, 2017, the day of this year's AGM. Befittingly, the first such lecture will be delivered by Prof. Vikram Kumar from IIT Delhi, himself being an expert in MEMS devices and also a very good friend of Prof. Selvarajan. I wish the members of the society will attend this lecture in large numbers, and pay their respects to Prof. Selvarajan for his distinguished service to ISSS.

GOVERNING COUNCIL

President:

Prof. S. Gopalakrishnan

Vice President:

Prof. K.J. Vinoy

Member Secretary:

Prof. G.K. Ananthasuresh

Treasurer:

Dr. B. Vidyashankar

Members:

Dr. V. Natarajan

Dr. P.V. Subramaniam

Prof. Navakanta Bhat

Dr. Anjana Jain

Prof Anurekha Sharma

Sri. V. Sudhakar

Dr. M.S. Giridhar

Prof. Ananth Selvarajan

Prof. Ananth Selvarajan was born on 10th September, 1938, in Tindivanam, Tamil Nadu. He obtained his BSc degree from Madras university in 1961, standing first in the college. He obtained the MSc degree in physics from Annamalai university in 1964 and PhD in physics at Indian Institute of Science in 1970.

After a brief period of service in physics department, Professor Selvarajan joined the ECE Department in 1972 as a lecturer and has been with the department for nearly three decades. He became an Assistant Professor in 1979, Associate Professor in 1984, and Professor in 1991. He served as the Chair of the Department during April 1995 to September 1999. During his tenure as the Department Chair, several important changes were brought about. Notable among them are the starting of two new ME programs in Signal Processing and Microelectronic Systems and restructuring of the earlier ME (ECE) program as ME in Telecommunications. He successfully organized the Golden Jubilee Celebrations of the Department in the year 1996, and the construction of the Golden Jubilee Seminar Hall thereafter. For this, the Department will remember him forever.



Prof. Ananth Selvarajan

Prof. Selvarajan has been instrumental in leading the Department into the Photonics era, shaping the present Applied Photonics Laboratory. He has the distinction of developing and nurturing one of the very few groups in India working in both theoretical and experimental areas of Applied photonics. He was quick to recognize the emerging areas in Applied Photonics such as Fiber-optic Communications, Integrated Optics, Smart Structures and Micro-opto-electro-mechanical systems (MOEMS) at a very early stage and initiating teaching and research in these areas. He has guided nearly 30 research students and has over 150 publications to his credit. He had worked on several research projects sponsored by industry and government, such as, acousto-optic filters, integrated optic switches, fiber-optic gyroscope and microwave photonics.

Prof. Selvarajan held visiting positions at University of Uppsala Sweden (1969-70), University of Arizona USA (1977-79), Technical University of Denmark (1986), University College, London (1987) and International Centre for Theoretical Physics, Italy (1991, 1993)

Prof. Selvarajan was very active in interacting with peer groups both in academics and industry. He was an active member of several professional societies such as Optical society of India, Optical Society of America, SPIE (Society of Photo-optical Instrumentation Engineers) and was the founding member of ISSS (Institute of Smart Structures and Systems). He played a key role in organizing the biannual international conference on Photonics in India, the first two of which were held in Bangalore in

1991 and 1994 under his Technical Chairmanship. He played an active role in IEEE Bangalore Section and was the vice-chair during 2004-06. He took an initiative to start the Annual Symposium of the IEEE Bangalore Section, one emerging thematic topic every year (now the symposium is called the IEEE CONECCT). He was also instrumental in starting the IEEE Photonics Society Bangalore Chapter in 2009 and IEEE Photonics Society India Council chapter in 2011, and took active role in the IEEE Photonics Society Conferences, ICOE in 2012, WRAP 2015 and CRALT 2016. IEEE Photonics Society Bangalore Chapter has set up A. Selvarajan Award for outstanding contribution to Photonics Education and Research.

Prof. Selvarajan was involved philanthropic activities and setup many charities and trusts. He setup a grant to promote photonics at the ECE Department in IISc. He gave an endowment to IISc for students to visit conferences abroad. He also setup a Trust called Arihant Charitable Trust (ACT) for higher education of poor children from remote villages in Karnataka.

Some of the condolence messages in the memory of Late Prof. Selvarajan

I join you all in condoling the death of Prof Selvarajan. We may consider instituting a special lecture in his memory either in International or National. Conference.

AR Upadhyaya

Sad to know that Prof Selvarajan is no more with us. A man of great wisdom and warmth. He was the backbone of our efforts in the smart material and MEMS programmes. We need to commemorate his contributions.

Kota Harinarayana

It is very sad to learn that Prof Selvarajan is no more. He was one of the key persons in pioneering the whole thought process about the smart technology initiatives in the country. I have very fond memories of interaction with him, first as a student in IISc and later in the entire smart technology work through National programmes and ISSS. May his soul rest in peace!

Prakash Mangalgi

I am extremely sorry to hear about the demise of Prof Selvarajan with whom I have closely associated for four decades. All those who have benefitted from the creation of MEMS design centers in the country in particular and those associated with him in B-Smart, ISSS, NPSM, NPMAS and the Photonics community in general, remember his contributions for ever. May his soul rest in peace.

S Mohan

Prof. Selvarajan was a valued member of ISSS, whom many of us revered for his wisdom and liked for his warmth.

G. K. Ananthasuresh

Seventh ISSS International Conference on Smart Materials Structures & Systems (ISSS 2017): 5th to 7th July, 2017.

Our triennial International Conference was held recently at Bangalore, from 5th July to 7th July. Two preconference workshops on Medical Devices and Internet of Things were held on the 4th of July. The conference was inaugurated by Prof. Anurag Kumar, Director, IISc. The conference was well attended by speakers and delegates from both India and abroad. Both academia and Industry was well represented in this event. As a part of the conference, a popular science lecture by Dr. Anil Ananthaswamy, a renowned science columnist was held on 6th July. Both the technical and public sessions were well attended. Annual ISSS awards to distinguished researchers, research scholars and students were also presented during the conference. One of features of this conference was a special session was held on each of the conference days that had the speakers to make a 5-minute 'pitch-talk' capturing the highlights of their talks later in the day. This helped in getting a flavour of what was coming! A detailed report of the conference will be covered in the coming issue of Sukshma.

Prof. Selvarajan Memorial Lecture to be delivered by Prof Vikram Kumar on 27th September 2017 at Dept of ECE; IISc., Bengaluru

Photovoltaic Research – an Indian Perspective

Vikram Kumar

Dr Raja Ramanna DRDO Fellow

Solid State Physics Laboratory, New Delhi

vkrm@iitd.ac.in

Abstract: With the recent thrust on solar energy posed by the Indian Government, the photovoltaic research and development has gained great importance. While the PV market continues to be dominated by the silicon crystalline solar cells which are largely imported, there is a need to improve the silicon cells as they have some limitations. At the same time, efforts continue to explore new materials and technologies. The Indian PV industry as well as research are in poor shape and much needs to be done. As the chair for PV effort at MNRE as well as DST for last few years, I have placed special emphasis on developing silicon technologies in Indian research institutes. In this talk, I will review the current status of PV research particularly from Indian perspective. After surveying the energy scenario, I will talk about the basics of solar cells and the current directions in silicon solar cell research taking place in Indian laboratories. Some recent developments nanowire solar cells will be presented.

Leaders of ISSS: Professor Ananth Selvarajan

Professor Ananth Selvarajan is a founding member of ISSS. He is a Professor Emeritus of the Department of Electrical Communication Engineering. Prof. Selvarajan was born on 10 September 1938 in Tindivanam, Tamil Nadu. He obtained his B. Sc. degree from Madras University in 1961 standing first in the college. He obtained the M. Sc. degree in physics from Annamalai University in 1964 and Ph. D. from the physics department, Indian Institute of Science in 1979.

After a brief period of service in the physics department, IISc, Prof. Selvarajan moved to the department of Electrical Communication Engineering in 1972 as a lecturer and stayed there for nearly three decades. He became a professor in 1991. He was the chairman of the department from 1995-1999. During his chairmanship several important changes were brought about. Notable among them are the starting of two new ME programmes in Signal Processing and Microelectronic Systems, and restructuring the earlier ME (ECE) programme as ME Telecommunications. He successfully organized the Golden Jubilee celebrations of the department in 1996.

Professor Selvarajan's research interests include photonics, MEMS, and smart structures. He has been instrumental in leading India into the photonics era. He has the distinction of developing and nurturing one of the unique groups in India working in both theoretical and experimental areas of applied photonics. He was quick to recognize the emerging areas in applied photonics such as fiber optic communications, integrated optics, smart structures and micro-opto-electro-mechanical systems (MOEMS) at a very early stage and initiated teaching and research in these areas. He has guided nearly 30 research students and has over 150 publications to his credit. He also worked on several research projects sponsored by industry and government on topics such as acousto-optic filters, integrated -optic switches, fiber-optic gyroscope and microwave photonics.

Prof. Selvarajan has also been very active in interacting with peer groups both in academics and industry. He has been an active member of executive committee of IEEE Bangalore Section and has been the Vice-Chair during 2002-2004. He has played a key role in organizing the biannual international conference on photonics in India, the first two of which were held in Bangalore in 1991 and 1994 under his technical chairmanship. He has held several visiting positions at University of Uppsala, Sweden (1969-70), University of Arizona, USA (1977-79), Technical University of Denmark (1986), University college London (1987) and International center for Theoretical Physics, Italy (1991, 1993). He played a major role in NPSM (see Vol. 1, No. 1, p. 1) activities. He was instrumental in initiating National MEMS Design Centers under NPSM (see Vol. 2, No. 1, p. 1). He was also responsible for creating the satellite MEMS design centers at various Institutions. He is also the chairman of the MCIT technical working group in photonics. Through this he has initiated several research activities in photonics at various institutes in the country. He is presently formulating a national program on nano-bio-photonics to bring together researchers and educators working in the broader area of micro-nano-photonics and make India the photonics hub of the world in the near future.

ISSS thanks Professor Selvarajan for his leadership and contributions in research and education.



A profile of Prof. Selvarajan featured in Vol.2, Oct. 2007 issue of Sukshma



**Institute of Smart
Structures and Systems**

CONTACT INFORMATION:

ISSS C/o Prof. K J Vinoy

Dept of ECE, Indian Institute of Science Bengaluru, 560012

Email: admin@isssonline.in