

# SYMPOL-2009 Report

## Held at Cochin, India, 18–20 November 2009

*Dr. P.R. Saseendran Pillai*

### Introduction



Realizing the need for initiating research and development activities in the area of Ocean Electronics and Exploration, which are going to be the major international issues of the 21st Century, the Department of Electronics of the Cochin University had started research and manpower development programmes with the active support from the Ministry of

Human Resources Development (Government of India), University Grants Commission, Department of Ocean Development/Ministry of Earth Sciences, Naval Research Board, Department of Information Technology, etc.. The Symposium on Ocean Electronics is a biennial event, started in 1991 to mark the occasion of the formal opening of the Centre for Ocean Electronics in the Department of Electronics of Cochin University. SYMPOL 2009 is the tenth symposium of this series and was organized as an International Venture. This Symposium is intended to provide a forum for the Scientists / Engineers working in this field to assemble and interact with each other and present their innovative ideas and research findings.

### Background of SYMPOL

The tenth Symposium on Ocean Electronics (SYMPOL-2009) was organized as an International Conference addressing the Global Oceans, Systems and Technologies during 18–20 November, 2009 in The Hotel International, Cochin. The first Symposium of this series (SYMPOL-91) was organized during 18–20 December 1991, to mark the occasion of the formal opening of the Center for Ocean Electronics established in the Department of Electronics of the Cochin University of Science And Technology as a joint venture of the Ministry of Human Resource Development (Government of India) and the University Grants Commission (UGC), New Delhi. A Technical Panel of SYMPOL-91 suggested that the Symposium on Ocean Electronics should be organized periodically, at least once in two years. In line with this recommendation, SYMPOL is being organized as a biennial event. The Technical Panel of SYMPOL-2005 organized during 15–16 December, 2005 suggested that SYMPOL should be organized as an international venture and its international visibility should be enhanced by giving wider publicity and hence SYMPOL-2007 was organized as an international conference. The enthusiasm, cooperation and support extended by the IEEE-OES particularly by Dr. James S. Collins led to the culmination of the technical cosponsoring of the SYMPOL-2009 by IEEE-OES.

### Series of SYMPOLs

The Center for Ocean Electronics (CUCENTOL) of the Department of Electronics, Cochin University of Science and Technology has organized the following SYMPOLs

- National Symposium on Ocean Electronics (SYMPOL-91) during 18–20 December, 1991.
- National Symposium on Ocean Electronics (SYMPOL-93) during 15–17 December, 1993
- National Symposium on Ocean Electronics (SYMPOL-95) during 18–20 December, 1995
- National Symposium on Ocean Electronics (SYMPOL-97) during 16–17 December, 1997
- National Symposium on Ocean Electronics (SYMPOL-99) during 16–17 December, 1999
- National Symposium on Ocean Electronics (SYMPOL-2001) during 18–19 December, 2001
- National Symposium on Ocean Electronics (SYMPOL-2003) during 16–17 December, 2003
- National Symposium on Ocean Electronics (SYMPOL-2005) during 15–16 December, 2005
- International Symposium on Ocean Electronics (SYMPOL-2007) during 11–14 Dec., 2007
- International Symposium on Ocean Electronics (SYMPOL-2009) during 18–20 Nov., 2009

### Publicity Support for SYMPOL By OES

SYMPOL has received boundless support and cooperation from many enthusiastic groups of professionals and professional bodies across the globe. The enthusiasm, cooperation and support extended by the IEEE-OES particularly by Dr. James S. Collins, resulted in getting a wider publicity for SYMPOL, as the SYMPOL-2005 and SYMPOL-2007 announcements were advertised in the OES Newsletters. This association the SYMPOL had with OES led to the technical cosponsoring of SYMPOL-2009 by IEEE-OES and the Acoustical Society of America (ASA).

### OES Technical Cosponsorship for SYMPOL-2009

The SYMPOL-2009 has bagged the technical cosponsorship from IEEE-OES. To further enhance the international visibility and standard of the technical program of SYMPOL 2009, all the papers received were reviewed by a technical panel of reviewers identified by IEEE-OES. The technical panel consisted of Dr. James S. Collins (University of Victoria), Dr. Kenneth G. Foote (Woods Hole Oceanographic Institution), Dr. Tim Duda (Woods Hole Oceanographic Institution), Dr. George Frisk (Florida Atlantic University), Dr. Jim Candy (University of California), Dr. Ananya Sen Gupta (Woods Hole Oceanographic Institution) and Dr. Albert J. Williams III (Woods Hole Oceanographic Institution), who officiated as the chairman of the technical panel. Efforts are being made for publishing the papers presented in SYMPOL-2009 in the IEEE Xplore. Moreover to further strengthen the ties of technical cosponsorship of SYMPOL by IEEE-OES, OES has nominated

Dr. James S. Collins (Vice President- Professional Activities) and Dr. Albert J. Williams III (Vice President- Technical Activities) as their representatives in SYMPOL-2009.

### Details of Venue and Participants

The venue of the International Symposium on Ocean Electronics (SYMPOL-2009) was The Hotel International, Cochin, located at the heart of the city. Tucked away strategically between the two main roads of Ernakulam (M.G. Road and Chittoor Road), the International Hotel has its obvious advantages. The mellowed old world charm, the soothing quiet and the all pervading nostalgia evoked by its decor are a welcome departure from the cliched and synthetic feel of many a star hotel. Precisely for this reason the International Hotel is rightly remembered as the transit lounge of the revisiting clientele.

Unlike many symposia/conferences organized by professional bodies/organizations, for SYMPOL, starting from its inception in 1991, CUSAT insists for the submission of full papers rather than extended abstracts. One of the unique features of the proceedings of SYMPOL is that all the papers accepted for SYMPOL used to be presented in the symposium. However, for SYMPOL-2009 one of the papers in the Research Session IV on Underwater Sensors and Applications entitled 'Single and Multibeam Echosounder Delineate Tsunami Wave Impacted Depressions off Chellanam, Kerala' could not be presented due to unforeseen situations, as the authors were held up in a one month cruise which got unduly delayed. The authors were very much apologetic in not having been able to present their paper in SYMPOL 2009.

The Delegates and Resource Persons of SYMPOL 2009 constituted a wider cross section representing the National Laboratories, Defense Research Laboratories, Universities, Indian Institute of Technologies, Indian Institute of Science, etc from India and University of Rhode Island, Naval Research Laboratory, University of Victoria, Woods Hole Oceanographic Institution, etc. from the United States as well as ONR Global, Japan, etc..

### The Inaugural Function

The International Symposium on Ocean Electronics (SYMPOL-2009) was inaugurated by Dr. M.A. Atmanand, Director National Institute of Ocean Technology, Chennai at 10.00 am



National Institute of Ocean Technology Director M. A. Atmanand inaugurating the the International Symposium on Ocean Electronics (SYMPOL 2009). K. Vasudevan, James S. Collins, Godfrey Louis, S. Anantha Narayan, P. R. S. Pillai and Supriya M. H. are also seen.

on 18th November, 2009 in a function presided over by Dr. Godfrey Louis, Pro-Vice-Chancellor, Cochin University of Science and Technology. Delivering the inaugural address, Dr. Atmanand stressed the importance of promoting Ocean Research for the well being of the humanity. He also stressed the importance of Global Warming quoting the statement made by the UN Secretary-General, Ban Ki-moon, "Human-induced global warming poses as much danger as war". The Secretary General also urged the United States to take the lead in the fight against global warming. Dr. Atmanand also indicated the importance of ocean observation system, ocean energy and renewable energies during his inaugural address.

### Technical Program

The technical program of SYMPOL-2009 commenced with a keynote address on Exploring the Ocean: Challenges and Emerging Trends by Dr. M.A Atmanand, Director National Institute of Ocean Technology, Chennai. Delivering the keynote address, he enumerated the various challenges faced by the ocean scientists, while attempting to validate the various ground truths at different locations. He also indicated the various opportunities for the enthusiastic Ocean Researchers. He gave a vivid account of various inertial navigation systems for underwater exploration applications as well as various techniques for measuring wave, tide and currents. He further elucidated the use of floating stations which can go down



M. A. Atmanand, Director, NIOT, Chennai, delivering the keynote address in SYMPOL 2009.



S. Anantha Narayanan, Director, NPOL, Kochi.



V. Chander, President, Ocean Society of India.



G. V. Anand, Indian Institute of Science, Bangalore.



D. D. Ebenezer, NPOL, Kochi.



Bishwajit Chakraborty, NIO, Goa.



Albert J. Williams III, WHOI, USA.



James S. Collins, University of Victoria, Canada.

underwater, gather the oceanographic data and come up to the surface and transmit the data collected to the earth station through the ARGO satellite. He also indicated that NIOT is actively working on a project to develop manned submersibles to study the ocean floor.

The following state-of-the-art invited talks on emerging topics in Ocean Electronics were delivered by eminent working engineers/scientists:

- Challenges in Dunking Sonar System Design by Shri S. Anantha Narayanan, Director Naval Physical & Oceanographic Laboratory, Cochin.
- Underwater Scramble by Shri V. Chander, Former Director NPOL, Cochin and President, Ocean Society of India.
- Sonar Projectors by Dr. D. D. Ebenezer, Naval Physical & Oceanographic Laboratory, Cochin
- Acoustic Vector Sensor Array Processing by Prof. G. V. Anand, Indian Institute of Science, Bangalore.

- Current, Wave and Turbulence Measurements in Coastal Waters and the Deep Sea by Dr. Albert J. Williams III, Woods Hole Oceanographic Institution, USA.
- Seafloor Classification using High Frequency Sonar: An Appraisal of the Activities carried out in Indian Ocean Region by Dr. Bishwajit Chakraborty, National Institute of Oceanography, Goa.
- Development of Underwater Measuring Systems: Challenges by Dr. V.G. Idichandy, Department of Ocean Engineering, Indian Institute of Technology, Chennai.
- The Olympics, the IEEE and the Development of Oceanic Engineering by Dr. James S. Collins, University of Victoria, Canada.

Apart from these, original research papers in the areas such as Navigational Aids and Instrumentation, Ocean Acoustics, Signal Processing & Underwater Sensors and Applications were also presented by working engineers/scientists from



*V. G. Idichandy, Indian Institute of Technology, Chennai.*

various Laboratories, Institutions, Universities, etc. from India and abroad in this symposium.

### Recommendations of the Technical Panel of SYMPOL 2009

The organizers of SYMPOL 2009 have convened a panel discussion on 19th November 2009. The panelists comprised of the Session Chairpersons, Invited Speakers and the representatives from OES, ONR and Government Agencies/Departments. While welcoming the panelists for the meeting, Dr. P.R.S Pillai, Chairman, SYMPOL-2009 presented a brief agenda for the meeting and requested Dr. D. Sreenivasan to conduct the Proceedings of the panel meeting. After an elaborate, critical, in depth deliberations and discussions, the Chairman of the technical panel, Dr. Sreenivasan consolidated the recommendations of the panel as follows.

- The quality of the papers presented and published in the Proceedings of SYMPOL-2009 were better than those in the earlier SYMPOLs.
- He expressed the gratitude and acknowledgements of the technical panel of SYMPOL-2009 to the IEEE-OES and Acoustical Society of America for their technical cosponsorship and also to IEEE-OES for rendering all sorts of technical support for conducting the expert review of the papers of SYMPOL-2009.
- He also opined that the two level review process of the technical papers of the SYMPOL-2009 and the fact that all the papers presented in SYMPOL-2009 will be published in the IEEE Xplore as well should have been widely publicized.
- He suggested that industrial participation in SYMPOL should be encouraged to the extent possible. He also indicated that the seismic division of ONGC (Oil and Natural Gas Commission) should be specifically invited for the next SYMPOL. Efforts should also be made for encouraging the participation from Indian Navy, Port Trusts, Shipyard, Center for Earth Science Studies (CESS), etc..
- Regarding the issue of shifting the venue of the next SYMPOL to Goa, Dr. P.R.S. Pillai expressed his deep concerns in managing the SYMPOL, if it is organized in Goa. He also emphasized the fact that the eleventh SYMPOL (SYMPOL-2011) has already been announced with Cochin as the venue. On the light of these, Dr. Sreenivasan suggested the organizers to examine the possibilities of shift-

ing the venue of one of the SYMPOLs to other places as suggested by the representatives of IEEE-OES and Acoustical Society of America.

- He also suggested that in line with the opinions expressed by most of the panelists, SYMPOL-2011 should have a pre-conference tutorial and a student poster session.
- He further opined, on the light of the deliberations, that for SYMPOL-2011 we should stick on to the usual practice of inviting full papers rather than extended abstracts, for conducting the two level review process.
- The announcement of SYMPOL-2011 scheduled to be held during 16–18 November, 2011 has been accepted, as it does not clash with either the OCEANS-2011 or the ASA meeting.
- In his concluding remarks, Dr. Sreenivasan indicated that SYMPOL-2009 has been organized in a better way and the hospitality arrangements were extremely good. He expressed his gratitude and sincere thanks to all the enthusiastic groups of CUSAT for making SYMPOL-2009 a grand success.

### Best Paper Awards

The Organizing Committee of SYMPOL-2009 has instituted a Best Paper Award for the best paper presented and published in the Proceedings of SYMPOL-2009. All the papers presented and published in the Proceedings of SYMPOL-2009 were considered for the award by the Award Committee with Dr. Albert J. Williams III, as the Chairman. The Committee was unanimous in selecting the winner paper entitled, Characteristics of Broadband Underwater Transducers Integrated with Tuning Coils and Cables co-authored by R. Ramesh, Sreejith S. Pillai, Pushpa Abraham and D. D. Ebenezer from the Naval



*Dr. D. D. Ebenezer receiving the Best Paper Award for SYMPOL 2009 from Dr. Godfrey Louis, Pro-Vice-Chancellor, CUSAT, during the award presentation ceremony held on 31st December 2009.*



*Dr. R. Ramesh receiving the Best Paper Award for SYMPOL 2009 from Dr. Godfrey Louis, Pro-Vice-Chancellor, CUSAT, during the award presentation ceremony held on 31st December 2009.*



*Sreejith S. Pillai receiving the Best Paper Award for SYMPOL 2009 from Dr. Godfrey Louis, Pro-Vice-Chancellor, CUSAT, during the award presentation ceremony held on 31st December 2009.*



*Pushpa Abraham receiving the Best Paper Award for SYMPOL 2009 from Dr. Godfrey Louis, Pro-Vice-Chancellor, CUSAT, during the award presentation ceremony held on 31st December 2009.*

Physical & Oceanographic Laboratory, Cochin. The best paper was formally announced by the Chairman of the Award Committee during the valedictory function of SYMPOL-2009 held at 4.00 p.m. on 20th November, 2009. The Best Paper Award, consisting of a Citation, Plaque and Certificate for each of the four co-authors have been presented to the winners on 31st December, 2009 in a function presided over by Dr. Godfrey Louis, Pro-Vice-Chancellor, Cochin University of Science and Technology. Photographs from the Best Paper Award presentation ceremony are shown below.

### Sponsorship

SYMPOL-2009 had the technical/financial cosponsorship from the following Government Agencies/Departments and Professional Bodies.

- IEEE Oceanic Engineering Society(OES)
- Acoustical Society of America(ASA)
- Ministry of Earth Sciences, Government of India, New Delhi
- Department of Science & Technology, Government of India, New Delhi
- Naval Research Board, Defense Research & Development Organization, New Delhi
- University Grants Commission, New Delhi
- Council of Scientific and Industrial Research, New Delhi
- Kerala State Council for Science, Technology and Environment, Government of Kerala.

### Cultural Evening

To provide a glimpse of the social, cultural and traditional art forms of the State of Kerala, a Cultural Program was organized on the 18th evening. The traditional art forms such as Thiru-



*Thiruvathirakali is an extremely popular folk dance performed by the maidens of Kerala.*



*Panchavadyam is basically a temple art form evolved in Kerala.*



*Kalaripayattu is a Dravidian martial art from Kerala.*

vathirakali, Kalaripayattu and Panchavadyam were presented to the distinguished invited guests and delegates of SYMPOL-2009. Some of the photographs of these traditional art forms presented to the SYMPOL delegates are shown below.

### Announcement of SYMPOL-2011

The eleventh biennial Symposium on Ocean Electronics (SYMPOL-2011) is scheduled to be held in Cochin during 16-18 November, 2011. The website of SYMPOL-2011 will be uploaded in a couple of months.

### Conclusion

The salient highlights of the Proceedings of the International Symposium on Ocean Electronics (SYMPOL-2009) have been presented in this Activity Report. The SYMPOL Organizers are very keen in sustaining the technical collaboration the SYMPOL has had with the IEEE-OES as well as the Acoustical Society of America. The Organizing Committee of SYMPOL is exploring the possibility of incorporating special sessions on selected areas for SYMPOL-2011.