



# EMC Week in Singapore: The 17th International Zurich Symposium & Technical Exhibition on Electromagnetic Compatibility

**February 27 to March 3, 2006**

*By Li Erping, President of EMC Singapore 2006*

The 17th International Zurich Symposium and Technical Exhibition on Electromagnetic Compatibility (EMC Zurich in Singapore 2006) was held from February 27 to March 3, 2006 at the Singapore SUNTEC International Convention and Exhibition Center. As it turned out, SUNTEC was a perfect location for this event as it provided great meeting rooms, is situated adjacent to the Central Business District of Singapore with ample hotel space, and offered a variety of restaurants to please the taste buds of participants. This was the first time that EMC Zurich was organized outside Europe and Singapore was an excellent host country that left a lasting impression on all participants.

The Symposium was one of the largest EMC events in the Asia-Pacific Region jointly organized by the Singapore universities, the A-STAR Institute, the IEEE EMC Singapore Chapter, the Institute of Engineers Singapore, and in close cooperation with the Swiss Federal Institute of Technology (ETH Zurich). The IEEE EMC Society as well as other societies provided technical co-sponsorship. The general organization of the Symposium followed the tradition of EMC Zurich with a clear focus on high quality technical papers and their presentations by speakers from all over the world. Two-day workshops and tutorials prior to the Symposium were conducted by 36 international specialists which introduced participants to the latest developments in the fields of Lightning EMC, Semiconductor Device EMC, Circuit Board EMC Design, Transportation EMC, EMC

Modeling and Simulation, EMC and Safety of Wireless Communication Devices, Naval Engineering EMC, EMC and Signal Integrity, Shielding and Protection, as well as System Level EMC Design and Control. These events alone were well attended with over 220 participants and provided some groundwork for the three days of regular EMC technical sessions to follow. In addition, several topical meetings and special sessions took place in the fields of Biomedical Electromagnetics, EMC in Asia, Military EMC, Nanoelectronics EMC, and Wireless Communication EMC.

In conjunction with the Symposium two important meetings were held: The IEEE Region 10 EMC Chapter Chairs Retreat and the Asia-Pacific EMC Chairpersons Meeting. Both were well attended and provided new information on the status of EMC activities in the Asia-Pacific region. The Symposium attendance with 450 delegates from over 40 countries was slightly smaller than the 2005 EMC Zurich event in Zurich with 550 participants, but was still significantly higher than the organizers had anticipated. Also the exhibition, co-located with the Symposium, had drawn over 35 exhibitors on 1000 square meters of floor space.

In his speech during the opening ceremony on Wednesday morning, Dr. Li Erping provided some background on the idea to move the EMC Zurich Symposium in even years from Zurich to Singapore. He described the organization of EMC Zurich in Singapore as difficult at times and certainly interest-



*The President of the Symposium, Dr. Li Erping, giving the welcome address at the opening ceremony on 1 March 2006.*



*The General Chair, Professor Ruediger Vabldieck, addresses the audience at the opening ceremony.*

PHOTOS COURTESY OF LI ERPING





*Dr. Peter Siegel of the California Institute of Technology, spoke on "Terahertz Technology in Outer and Inner Space" during his keynote speech at the Symposium opening session.*



*Dr. C. K. Chou from Motorola presents "The Potential of EMC in a Seamless Mobility Environment" for his keynote speech at the Symposium opening session.*

ing, but also as one of the most challenging jobs he ever faced. In light of this, he felt relieved when finally all the pieces of the work fell into place and the Symposium ran smoothly. He thanked all the organizing committee members for their great enthusiasm and hard work and emphasized the fact that without their relentless effort, the Symposium would not have been possible. On behalf of the organizing committee, he also expressed his sincere thanks to the symposium sponsors namely, Schaffer EMC Pte Ltd, Rohde & Schwarz, Singapore Technologies Electronics Ltd, CST, EM Test, Swiss House Singapore and TME.

The General Chair, Professor Vahldieck, complimented the local organizing committee for a job well done and announced that the 18th EMC Zurich Symposium will be held in Munich from September 24-28, 2007, at the same time of the world renowned Oktoberfest.

The Technical Program Chair, Professor Todd Hubing, outlined the technical paper selection and review process. He pointed out that the technical papers in Singapore maintained as high a standard as known from Zurich and that about 30% of papers submitted were rejected.



*Professor Joungho Kim from KAIST, Korea, presents his paper in Singapore.*



*Professor and Mrs. Yoshino join Professor and Mrs. Vahldieck at the reception held during the Symposium.*

The Deputy-President of Nanyang Technological University, Professor Er Meng Hwa, the Swiss Ambassador to Singapore, Dr. Daniel Woker, and the President of the IEEE EMC Society, Dr. Andrew Drozd, welcomed all participants in the name of their respective organizations. The highlights during the opening session were two keynote speeches. First, Dr. Peter Siegel, of the California Institute of Technology, spoke on "Terahertz Technology in Outer and Inner Space" and Dr. C. K. Chou spoke on behalf of Rob Shaddock, CTO for Mobile Devices at Motorola Inc., on "The Potential of EMC in a Seamless Mobility Environment."

The following three days offered 45 well attended technical sessions and, in parallel, the Topical Meetings on concepts in Biomedical EMC, Wireless Communication EMC, Nanoelectronics EMC, Automotive EMC, and Semiconductor Device EMC.

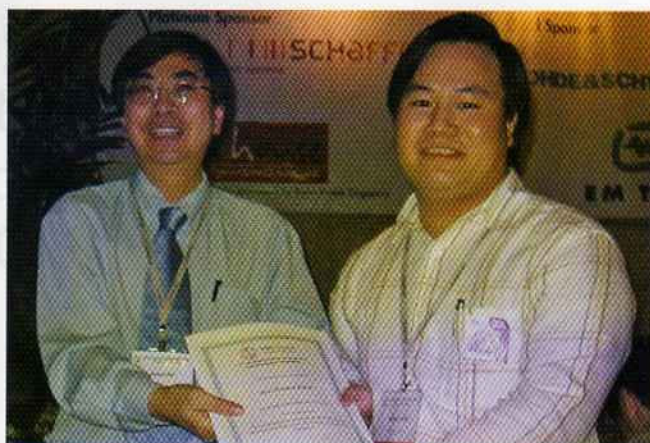
In the evening following the first technical session on March 1, the delegates were invited to visit the Electromagnetic Environment Research Lab (EMERL) located at the Nanyang Technological University, which is a newly built EMC lab in Singapore. Delicious appetizers were provided to the delegates prior to the lab tour. The delegates enjoyed the reception food and the visit.





*The judges working on the best student paper winners included, clock-wise from left, Professor Flavio Canavero, Professor Peter Leung, Professor See Kye Yak, Dr. Koh Wee Jin and Professor Todd Hubing (back to the camera).*

The Best Symposium Paper Award was given to Professor Stefano Grivet-Talocia, Ms. Silvia Acquadro, Mr. Carlo Peraldo, Professor Flavio Canavero, Dr. Ilkka Kelandar, Dr. Markku Rouvala, and Dr. Ali Arslan, all from the Politecnico di Torino, Italy, for their paper "Parameterized Macromodels for Lossy Multiconductor Transmission Lines." This selection was from 169 regular papers and 50 Topical Meeting papers reviewed by two to five independent reviewers. From a short list of 10 papers the jury consisting of Professor Youji Kotsuka, Dr. William Radasky, Professor Shen Zhongxian, Professor Robert Weigel and Dr. Franz Schlagenhauer, selected the



*The first place student prize winner, Mr. Kezhong Zhao (left), receives the certificate from the Technical Program Co-Chair Professor Ma Jianguo.*

finalist. The jury commented that all the 10 short listed papers were excellent and the decision was very difficult to select just one. To expose the best Symposium papers to the international community, all authors of accepted papers were invited to submit an extended version of their paper to the IEEE Transactions on EMC for a possible issue on EMC Zurich in Singapore to appear at the end of 2006. However, the condition is that those papers submitted must have a significantly extended content (about 60%) over the Symposium paper and will go through yet another rigorous review process after which only about 10 papers will be selected for publication.

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The Best Student Paper competition was an equally difficult task for the judges. Here, 21 papers were short listed from 58 student papers. Besides the oral presentations, the students were required to present their papers in the poster session. The jury consisting of Professor Todd Hubing, Professor Peter Leung, Professor Flavio Canavero, Professor See Kye Yak and Dr. Koh Wee Jin selected the three best papers. The first prize went to Kezhong Zhao and Jin-Fa Lee from Ohio State University for their paper "An Accelerated Non-Conforming DP-FETI Domain Decomposition Method for the Analysis of Large EMC Problems." The second prize went to Stephan Braun, Mohammed Al-Qedra, and Professor Peter Russer from the Technische Universität München, Germany for the paper "A Novel Real-time Time-domain EMI Measurement System Based on Field Programmable Gate Arrays." Mr. Kin Seong Leong and his co-authors Mun Leng Ng and Professor Peter Cole from the University of Adelaide, Australia, won the third prize for the paper "Operational Considerations in Simulation and Deployment of RFID Systems." The associated prize money was 1000, 600, and 400 Singapore dollars, respectively.

The dinner banquet of the Symposium was specially held at the world's premier Singapore Night Safari (a night zoo). Creatures from South America, Asia, and India greeted visitors from their own naturalistic enclosures, which simulate that of their own homeland. Even the tablecloths were decorated using the tiger skin color.

In conjunction with the EMC Zurich in Singapore, the "Asia-Pacific EMC Chairpersons Meeting" was held at Suntec City Singapore, with the goal to address EMC collaboration, EMC enhancement, and unification of EMC symposia in the Asia-



*An elaborate banquet dinner titled "Singapore Night Safari" was held during the Symposium.*

Pacific region. The meeting was well attended with EMC representatives from every major Asia-Pacific region including Australia, China, Korea, Malaysia, Hong Kong, Japan, Singapore and Thailand. Dr. Andrew Drozd, the President of the IEEE EMC Society, Elya Joffe, the Vice-President for Member Services of the IEEE EMC Society, as well as Professor Ruediger Vahldieck, General Chair of EMC Zurich from ETH Zurich, Switzerland, also attended the meeting. At the meeting, all agreed to start planning for such an event with the goal to establish one united Asia-Pacific Symposium on EMC that could be held every one or two years moving from one Asian country to the next. A Steering Committee was formed consisting of one representative from each country or region. The first such Asia-Pacific Symposium on EMC will be tentatively held in 2008. EMC

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