

iCEER-2005, KUT, KOSEF, and Hanyang University

February 27 - March 17, 2005

A Trip Report

by

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The report concerns iCEER-2005, which was held in Taiwan, Republic of China. I am also pleased to report on my recent outreach visits to three organizations in the Republic of Korea: the Korean University of Technology and Education (KUT), the Korean Science and Engineering Foundation (KOSEF) and Hanyang University.

iCEER-2005 (2005 International Conference on Engineering Education and Research) took place in Taipei and Tainan, Taiwan, during February 28 – March 5. The trip to KUT in Chonan occurred on March 14, 2005, while the visit to KOSEF in Taejeon (AM) and to Hanyang University (PM) in Seoul both occurred on March 15, 2005.

I am pleased to provide details on each of these activities in the following sections, accompanied by photos where pertinent. More photos are posted at:
<http://www.ineer.org/Photo/Welcome.htm>.

Furthermore, I would like to take this opportunity to thank the hosts in each event for the arrangements and the hospitality.

(1) iCEER-2005 Pre-Conference Workshop, Taipei, Taiwan, February 28

The Workshop was organized by the Institute of Engineering Education Taiwan (IEET) under the leadership of Dr. Che-Ho Wei, Chairman of the National Science Council of Taiwan during 2001-2004 and currently Professor of Electrical Engineering at National Chiao Tung University, Hsinchu, Taiwan. I presented an invited talk concerning the impact of workforce trends on international cooperation in engineering education and research. Other speakers include: Dr. Alex Chan, Immediate Past President of Hong Kong Institution of Engineers (HKIE) on the HKIE accreditation system; Dr. Andrew M. Wo, Director of International Affairs of IEET on accreditation of engineering programs in Taiwan; Prof. Hu Hanrahan of the University of Witwatersrand, South Africa on quality in engineering education, focusing on the interplay of standards, accreditation, curriculum and assessment.

The theme of the workshop concerned improving engineering education through partnership, especially through cooperation and mutual recognition of accredited engineering programs. Chan, Wo and Hanrahan represent countries that are signatories to the Washington Accord. This is an international agreement between bodies responsible

for accrediting professional engineering degree programs in various countries. The agreement recognizes the substantial equivalency of accredited programs as having met the academic requirements for entry to the practice of engineering.

The Accord was established in 1989 by 6 signatories: Australia, Canada, Ireland, New Zealand, UK, and USA. Subsequently, Hong and South Africa joined. In 2001, Japan became the first country to join as the first non-English speaking signatory on a provisional basis. Countries that joined as provisional signatories in 2003 were Germany, Malaysia, and Singapore. Membership in the Washington Accord is expected to be further enlarged later this year, as more countries or economies (such as Taiwan) become provisional signatories.

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(2) Joint iNEER Board-ISC meeting, Tainan, Taiwan, March 1

This meeting was held from 7 – 11 PM on March 1 and was co-chaired by Prof. Tomas Cermak (right photo below, 2nd from right), Chair of the iNEER Board and Rector of VSB – Technical University of Ostrava, Czech Republic, Prof. S.H. Ou (right photo below, 1st from right), General Chair of iCEER-2005 and Vice President of National Cheng Kung University, Tainan, Taiwan, and myself.

The purpose of the meeting was to review recent developments in global engineering education. ISC members provided updates on activities and plans to increase the quality of engineering education, and students' experience, through international cooperation. During the meeting, the iNEER Board gave final approval for 2 of 7 formal proposals, under review by iNEER since June 2004, for future conferences. As a result, members of the iNEER Network will meet in Portugal in 2007 for ICEE-2007: Coimbra, and in Hungary in 2008 for ICEE-2008: Budapest-Pecs.

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(3) iCEER-2005, Tainan, Taiwan, March 2- 5

This conference was hosted by National Cheng Kung University (NCKU) under the leadership of Prof. Shan-Hwei Ou, Vice President and Dr. Jiun-Jih Miao, Professor of Aeronautics and Astronautics. About 200 attendees from 27 countries participated. Included in the registration package was a copy of the 2005 iNEER Special Volume: *Innovations 2005 – World Innovations in Engineering Education and Research*, edited by Win Aung, Robin King, Jerzy Moscinski, Shan-Hwei Ou, and Luis Manuel Sanchez Ruiz (see: <http://www.ineer.org/iNEERPapers/Welcome.htm>).

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The 4-day conference featured 7 keynote speakers and 10 invited lecturers. There were 125 contributed papers, and 40 poster papers. Topics covered include the following: Assessment of Curriculum Design and Student Learning; Combination of Classroom and Distance Education; e-Learning for Engineering Education and Research; International Engineering Education Accreditation; Language and Communication in Engineering Education; Engineering Education in Nanotechnology; Online Laboratory Computing and Infrastructure Technologies; Education in Opto-Mechatronics and System on Chip; Wireless and Mobile Technologies in Engineering Education; Biotechnology; International Cooperation and Exchange Programs; and Problem-Based Learning

Present at the opening ceremony and delivering welcoming remarks were: Professor Tomas Cermak, Chair of the iNEER Board and Rector of VSB-Technical University of Ostrava, Czech Republic; Dr. Lu Mu-Lin, Vice Minister of Education, Republic of China (ROC) on Taiwan; Dr. Chun-Chen Liao, Deputy Minister, National Science Council, ROC; Professor Chiang Kao, President NCKU, and Professor Shan-Hwei Ou, Vice President, NCKU; Professor Juh-Wah Chen, Dean Emeritus, Southern Illinois University; and Dr. Win Aung, Secretary-General, iNEER.

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Professor David Chang, President, Polytechnic Institute of New York was a keynote speaker (center picture above, 1st from right). Professor Yury Chebotarevsky, Rector, Saratov State Technical University, Saratov, Russia (standing in the middle in center photo above) was an invited speaker. Among the many participants from overseas was Lt. Col. Chris J. Putko, of the U.S. Military Academy at West Point, New York, who is pictured in the photo on the right above in a light-hearted moment.

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The mayor of Tainan and the Tainan City Council Chairman welcomed and greeted attendees with a reception and a memorable musical evening at Tainan City Hall. Participants also attended the Tainan Lantern Festival (photo below, right) on the outskirts of Tainan.

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In addition to lab tours, a technical tour was organized for participants to the Southern Taiwan Science Park. At the award ceremony held following the cultural performance (2nd for conference participants) at the conference banquet, Prof. Che-Ho Wei (Taiwan) was presented with the Leadership Award, and Prof. Hamadou Saliah-Hassane (Canada) the Achievement Award.

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On the last day of the conference, the authors of 4 contributed papers were presented with Best Paper Awards, one of the award recipients being Professor Taylor Martin of the

University of Texas, Austin, TX (seen in the center photo below with presenter Dr. Vojislav Ilic of the University of Western Sydney, Sydney, Australia). Some of the participants also paid a courtesy visit to Professor Chiang Kao (seated in the middle facing camera, right photo below), President of National Cheng Kung University.

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- (4) Korea University of Technology and Education (KUT) in Chonan; KOSEF (Korea Science and Engineering Foundation) and Hanyang University in Seoul, South Korea, March 13-17

KUT was established by the Korean government in 1992 as the Korean Institute of Technology and Education. It was renamed Korean University of Technology and Education in 1995. International cooperation has been an emphasis at the university since its inception. In 1999, it was designated

Its undergraduate division comprises 6 schools (Mechanical Engineering; Mechatronics Engineering; Information Technology Engineering; Internet-Media Engineering; Industrial Management; and Liberal Arts and Education) and 5 departments (Control System Engineering; Industrial Design Engineering; Architectural Engineering; Materials Engineering; and Applied Chemical Engineering). The Graduate School has 7 departments awarding master's degrees and 2 awarding doctor's degrees. Currently, there are 3,000 undergraduate and 1,000 graduate students.

My visit to the campus took place on March 10 and I was joined by Dr. Che-Ho Wei, Past Chairman of the National Science Council of Taiwan (seated on right in left photo below). Our visit included a meeting with Dr. Hyung-Nam Moon, the current president of the university (seated 2nd from left in left photo below). We also visited HRDI (Human Resource Development Institute; photo below, center photo) and the nearby Independence Hall (photo on right, below).

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Through HRDI, KUT provides vocational training for domestic as well as international managers and engineers, and is supported by the Ministry of Labor. At the time of our visit, a group of 20 Egyptian engineering personnel (some pictured in photo below, left) were undergoing a 3-month, resident training program at HRDI.

We were given a demonstration of web-based courses developed at HRDI jointly by in-house web-developers and KUT faculty. These web-based courses were credited with significantly improving student retention and graduation rates. To help motivate student learning, the courses rely heavily on case studies and problem-based learning. Up-to-date pedagogical approaches are also employed, such as e-notebook, online simulations, and web-based assessment.

We also briefly attended lectures in progress at SETEC (Semiconductor Equipment Technology Education Center; photo below, center). SETEC, under the direction of Prof. Kwang-Sun Kim (seated left in left picture above; standing 1st left in left photo below) is

supported by major Korean semiconductor companies (Samsung Electronics; LG Semicon; Hyundai Electronics; and Anam Semicon).

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The discussion at KOSEF (Korean Science and Engineering Foundation), with Dr. Oh-Kab Kwon (first from left on left photo below), Chairman and CEO, and Dr. Byung-Wan Ho (third from right, center photo below), Director of International Programs, was focused on possible approaches to increasing the cooperation between Korean academics in engineering and allied fields and the international community. One option being discussed is to hold a major conference on engineering education and research in Korea. It was pointed out by Dr. Ho that the KOSEF budget for international cooperation has grown significantly, and it now approaches US\$50M.

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KOSEF was established in 1977 for the purpose of improving South Korea's capabilities in science and technology by developing research, education and international cooperation programs involving its academic institutions. In 1989, KOSEF initiated the Centers of Excellence Program: the Science Research Centers (SRC) and the Engineering Research Centers (ERC), each with a 9-year funding cycle. To date, a total of 104 centers have been created.

Hanyang University is one of the largest and most prestigious universities in South Korea. A private institution, it was established in 1939 as Dong-A Engineering Academy and elevated to a university and given its present name in 1959. The university has campuses in Seoul and Ansan. In 2000, it ranked 4th in the total amount of research funds awarded by the Ministry of Education, and 1st in the production of executives for major corporations. In 2002, at 13 papers per professor, the university ranked 1st in the rate of increase in research papers published per professor.

The combined Seoul and Ansan campuses have over 24,000 students, close to 10,000 of whom being undergraduate students in engineering. In addition, there are close to 8,000 graduate students, all on the Seoul campus.

The university offers M.S. and Ph.D. programs in 5 divisions, 67 departments and 9 majors.

Hanyang University is very active in international cooperation. It has held a biennial joint symposium with Waseda University of Japan since 1996. The 2001 Asian-Pacific University Presidents' Conference was held at the university. Hanyang University currently has 114 academic exchange with 18 countries, and offers various study abroad programs. The university also actively recruits foreign students, and there are over 350 foreign students studying at the university.

Prof. C.H. Wei and I visited Hanyang University on March 15, 2005 and met with Prof. Li-Hyung Lee (first from left facing camera, seated, left photo below), Vice President and

Professor of Architecture, and a number of deans and faculty members. We also toured research laboratories for materials science and engineering (center photo below).

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