Awards

◆ The World Federation of Engineering Organizations named Professor Y.K. Cheung as the recipient of the Medal of Excellence in Engineering Education (Medal in left hand). The award was presented on 15 October 2003 at its General Assembly in Tunis.

◆ The Hong Kong Institution of Engineers (HKIE) named Professor Y.K. Cheung as its first Gold Medal winner (Medal in right hand) in recognition of his outstanding contributions and achievements in the field of engineering. The award was presented on 9 March 2004 at the HKIE’s 29th annual dinner held at the Hong Kong Convention and Exhibition Centre.

◆ Dr. F.T.K. Au received the Best Teacher Award 2003-04 from the Faculty of Engineering.

◆ Professor H.H.P. Fang received the Outstanding Research Student Supervisor Award 2003-04 from the University.

◆ Professor J.H.W. Lee received the Outstanding Researcher Award 2003-04 from the University.

◆ Professor J.H.W. Lee received the Outstanding Researcher Award 2003-04 from the University.

◆ Dr. X.Y. Li received the Outstanding Young Researcher Award 2003-04 from the University.

Activities

◆ Professor J.H.W. Lee:
  • The Area of Excellence (AoE) on Marine Environment Research and Innovative Technology (MERIT) was awarded HK$45M by the UGC in January 2004 for the period 2004-09. As one of the four key task team leaders, Professor Lee is heading a team of 5 HKU researchers on this inter-institutional AoE venture related to water environmental issues. This is a significant achievement that grew out of several years of inter-disciplinary work since the HKU AoE in Water Environment Engineering was started in 1999.
  • The findings of an engineering team led by Professor Lee that carried out an independent study on the causes of the outbreak of SARS in Amoy Gardens were published in the prestigious New England Journal of Medicine in April 2004.
  • Delivered an invited lecture at the Symposium on Advances in Turbulence Modelling, International Conference on Hydroscience and Engineering, 30 May - 3 June 2004, Brisbane, Australia.
  • Delivered an invited lecture at the Tenth Asian Congress of Fluid Mechanics (ACFMX), 17-21 May 2004, University of Peradeniya, Sri Lanka.

◆ Professor A.M. Chandler:
  • Visited the Department of Civil and Environmental Engineering at University College London (UCL) during the period 3 May - 3 June 2004, to conduct collaborative research in earthquake engineering as part of a long-standing cooperative research initiative.

◆ Dr. S.C. Wong:
  • The Working Group on “Review of Regulation of Non-franchised Bus Operation”, in which Dr. Wong was a member, submitted their report to the Transport Advisory Committee of the Government of HKSAR in July 2004.

◆ Dr. J. Yang:
  • Visited the Disaster Prevention Research Institute of Kyoto University, Japan from 8-13 August 2004. The institute is a national centre of excellence in research on natural disasters. Dr. Yang was also invited to deliver the 135th Earthquake Engineering Seminar at the School of Civil Engineering and Urban Management of the University. His lecture was entitled “Evaluating liquefaction resistance of partially saturated sand”.

◆ Dr. A.T. Yeung (below, on right):
  • Gave a CPD course on “Practical Aspects of Bored Pile Construction in Hong Kong” for the American Society of Civil Engineers Hong Kong Section on 13 March 2004. The course was attended by more than a hundred participants.
  • Delivered an invited lecture “Quality Control of Foundation in Hong Kong” at the HKIE Building Division 3rd Annual Seminar on Monitoring & Inspection of Building Works on 18 March 2004 at the Hong Kong Convention and Exhibition Centre. Approximately 250 people attended the event.
Others:

- Professor László Somlyódy, Head of the Department of Sanitary and Environmental Engineering, Budapest University of Technology and Economics and President Elect of the International Water Association (IWA) visited the Department between 30 May to 4 June 2004 under the auspices of the Environmental Hydraulics Visiting Fellowship. He delivered a public lecture entitled "Water Science for Policy Actions: Waste-water Management in Rio de Janeiro and Rehabilitation of Guanabara Bay" and a seminar on water quality modelling and environmental hydraulics of surface waters.
- Mr. Douglas Oakovee and Mr. Amar Bhogal, the President and Deputy Director General, respectively, of the U.K. Institution of Civil Engineers (ICE) visited the Department on 9 August 2004.

Staff News

- Professor C.F. Lee:
  - Appointed as full-time Pro-Vice-Chancellor (2004-09).
  - Elected President of the Hong Kong Academy of Engineering Science (2004-07).
  - Appointed Chairman of the Habourfront Enhancement Committee (2004-06).
  - Appointed Chairman of the Veterinary Surgeons Board (2004-06).
  - Selected as Fulbright Distinguished Scholar (2004-05), U.S. State Department.

- Professor J.H.W. Lee:
  - Appointed as part-time Pro-Vice-Chancellor (2004-07).
  - Elected Vice-President of the Hong Kong Academy of Engineering Science (2004-07).

- Dr. S.C. Wong:
  - Appointed a member of the Transport Advisory Committee, The Government of HKSAR, from 1 April 2004 for two years.

- Dr. A.T. Yeung:
  - Appointed Chairman of the Organizing Committee of the Conference on Foundation Practice in Hong Kong organized by the Centre for the Research & Professional Development. The conference is to be held at the Hong Kong Convention & Exhibition Centre on 4 September 2004.
  - Appointed Chair of the Organizing Committee of the 9th International Symposium on Environmental Geotechnology and Global Sustainable Development to be held in Hong Kong in 2008.

- Others:
  - Dr. A.T. Yeung and Dr. M.R. Yeung have been elected to the Board of Direction of the American Society of Civil Engineers (ASCE) Hong Kong Section 2003-04.
  - Professor A.K.H. Kwan and Dr. A.T. Yeung have been appointed External Examiners of the 4-year programme in Civil Engineering in the Faculty of Science and Engineering of Chu Hai College, Hong Kong. 2003-05.

Croucher Laboratory of Environmental Hydraulics

The Hydraulics Laboratory of the Department of Civil Engineering was selected by the Croucher Foundation to be named after the late Noel Croucher to commemorate the Foundation’s 25th anniversary. The Naming Ceremony was held on April 2, 2004. It was officiated by the Acting Vice-Chancellor (Professor John Spinks), the Chairman of the Croucher Foundation (Professor Yuet-wai Kan), and the Director of the Croucher Laboratory of Environmental Hydraulics (Professor J.H.W. Lee). This was the first Croucher Laboratory Ceremony held; the occasion was graced by the presence of members of the Croucher Board of Trustees, Pro-Vice-Chancellors Professors C.F. Lee and Paul Tam, and over 60 guests from academia, government and industry. The guests were given a short presentation by the Director, followed by a laboratory tour of key projects.

The discipline of environmental hydraulics, which developed in response to a growing awareness that the planet’s precious water resources must be protected, seeks to predict the fate and transport of materials in the water environment. Environmental hydraulics encompasses areas of great concern to Hong Kong, including the protection of the marine environment, urban drainage and flood control, water supply and river basin management, and impact assessment of infrastructure projects such as land reclamation. A dedicated laboratory is essential to hydraulic research; experimentation always remains a source of new theoretical ideas, and the practical solution of complex hydraulic engineering problems often requires the use of large physical scale models.
The Environmental Hydraulics Laboratory is the largest laboratory of its kind in Hong Kong. Researchers of the laboratory have conducted basic and applied research in a variety of hydraulic problems since the early 1980s. They have contributed internationally to the understanding of buoyant jet mixing and its application to sea outfall design, and played a key role in several major environmental hydraulic projects in Hong Kong and overseas - including the impact assessment of the Strategic Sewage Disposal Scheme (SSDS), the innovative award-winning Tai Hang Tung Storage Scheme for flood protection of West Kowloon, and the post-operation monitoring of the Sydney Deepwater Ocean Outfall. The laboratory has also pioneered the use of advanced engineering models to solve red tide and fisheries management problems in Hong Kong.

Hydraulics and environmental engineering have been core areas of development in the field of civil engineering in recent years, and research at the laboratory is fed into a large number of undergraduate and postgraduate courses offered by the Faculty of Engineering. The laboratory’s core members constitute Hong Kong’s first generation of “high tech” environmental hydraulic engineers, and many of their research students are working in important government, academic, or industrial positions where they can apply their knowledge in working towards a sustainable environment.

CICID (Centre for Infrastructure and Construction Industry Development)


The ‘Development Workshop’ on ‘Strategic Management with Information Leveraged Excellence’ (SMILE) for ‘Small and Medium Contractors’ (SMCs), in the SME Development Fund sponsored SMILE-SMC project was held on Saturday June 26, 2004. It targeted the prioritisation of user needs and identification of specific directions for the SMILE-SMC system development. The aim of the SMILE-SMC project is to empower the continuous improvement of construction contractors in general and SMCs in particular, by providing an SMC-friendly framework and innovative tools for continuous improvement in boosting productivity, quality and image, through strategic information and knowledge management. Proposed features include: SMC-friendly Information & Knowledge Management platforms, including web-based systems and Knowledge Management tools e.g. through mobile communication and web-based formats, for boosting their business and operational processes. These are being developed based on a pilot ‘needs analysis’ survey conducted with ‘Partner Contractors’ (PCs), a structured questionnaire survey across the industry and ‘workflow analyses’ with the site staff and senior management of PCs. These exercises confirmed the many and diverse needs of construction organisations. Therefore, the workshop was designed to identify a few common high priority critical needs that could improve the performance and competitiveness of many SMCs.

Apart from the HKU research team, 46 participants registered for the workshop, which met the original target for empowering healthy discussions. Attendees included PCs, a cross section of motivated SMCs, representatives of various construction associations, and the Construction Industry Training Authority. The SMILE-SMC R&D team presented the up-to-date findings, overall conceptualisation/ framework of the system, and developments within various modules. In the afternoon session, the participants were divided into several pre-planned ‘small discussion groups’, in order to generate more focused interactions and feedback. An overseas expert Professor Chimay Anumba gave two presentations on relevant developments in Europe and the benefits of IT and knowledge management for SMCs. A quick survey was also conducted among the workshop participants to confirm the importance of certain workflow items. The feedback received at the workshop was positive and valuable. Many SMCs saw considerable benefits from SMILE-SMC outputs.

The SMILE-SMC project is funded by the Small and Medium Enterprises Development Fund of the Trade and Industry Department, HKSAR and supported by The University of Hong Kong, Faculties of ‘Engineering’ and ‘Architecture’ and involves an interdisciplinary team. It is co-ordinated by Dr. Mohan Kumaraswamy and Dr. Thomas T.S. Ng. The R&D Manager is Dr. Motiar Rahman. Ms. Elaine Lam and Mr. Calvin Luk played important roles in the success of the above Development Workshop, along with other members of the SMILE-SMC team.

Research Highlight

This is the second of a series of articles given by researchers in Water Environment Engineering

Bio-Hydrogen Production from Wastewater

This study, conducted since 2001 by Professor Herbert H. P. Fang in the Environmental Biotechnology Laboratory, has been supported by the HKU University Development Fund together with two RGC grants.

Wastewater has been treated biologically for nearly a century. The conventional aerobic process is not only energy intensive, but also produces large amounts of wasted sludge which requires further costly disposal. In the past two decades, anaerobic technology has been successfully developed to overcome these drawbacks. In this process, pollutants in wastewater are converted, without the need of aeration, to methane, a readily useful fuel, producing substantially less wasted sludge than the aerobic processes. However, methane is not only a greenhouse gas but also has little commercial value other than being used as fuel.

Professor Fang, a world-renowned expert in anaerobic technology, has pioneered in the past five years the development of a new technology for wastewater treatment. The objective is to develop
an effective wastewater treatment process, in which organic pollutants are biologically converted into hydrogen instead of methane. Hydrogen is not only a high-value gas of many industrial applications, but also an ultra-clean fuel producing only water upon combustion. It is likely to replace fossil fuels as the fuel of the next generation, according to many energy experts.

Converting organic pollutants into hydrogen is a two-step process. Based on chemical thermodynamics, acidification of wastewater by fermentative bacteria (Figures 1 and 2) may recover 10-20% of organic pollutants’ chemical energy as hydrogen. The remaining 80-90% of energy in the acidified effluent may be further converted to hydrogen by phototrophic bacteria (Figure 3). Research conducted by Professor Fang so far has demonstrated that up to 32% of the chemical energy in pollutants may be harvested as hydrogen, using two reactors in series. In the first reactor, wastewater is acidified by granular biomass with excellent settleability and high microbial concentration. The acidified effluent is subsequently treated in a photo-bioreactor (Figure 4) for the further production of hydrogen.

Improvement of reactor design and optimization of operational conditions are still in progress. This one-stone-two-birds technology is of significance not just in pollution control but also in sustainable production of energy.

### Awards

- **Mr. Kwok Tik Man** (2003 graduate) was awarded the prize of the Best Undergraduate Student in Geotechnical Subjects by the Geotechnical Division of HKIE at their Annual General Meeting held on 7 May 2004.
- **Mr. Au Chi Fai**, Mr. Cheung Ying Hei, Rex, Miss Lee Lai Yeng, Kitty, Mr. Leung Chi Bun, Benny, Mr. Leung Yat Fai, Andy and Miss Ngai Yin Ying, Christy (2004 graduates) have successfully completed the Gammon Skanska University Fellowship Programme 2003-04.
- **Mr. Siu Wing Ho**, Calvin, Mr. Wong Chun Ho, Terry, Mr. Wong Hoi Wing, Keith and Mr. Wong Tsang Hung, Chris (Year 3 B.Eng. students) have been selected to join the Gammon Skanska University Fellowship Programme 2004-05.
- **Miss Chan Wei Kei** (B.Eng. student) won the gold medal for windsurfing in the Mistral One Design (for Women) in the 2nd World University Sailing Championship, held in July 2004 in Izmir, Turkey.
- **Miss Lau Suk Lei** (M.Phil student) was awarded the DuPont Scholarship 2003-04.
- **Dr. Motiar Rahman** (Ph.D. graduate of 2003) received the award for Outstanding Research Postgraduate Student 2002-03 from the University.
- **Miss Lo Chung Man** (Year 2 B.Eng. student) has been awarded the Hongkong Bank Foundation Overseas Scholarship Scheme 2004-05 which will enable her to study for one academic year at the University of Warwick, U.K.
Activities

◆ Summer Industrial Training 2004

All undergraduate students have to complete 8 weeks of summer industrial training as part of the B.Eng. Civil Engineering degree programme. This year a record total of 141 placements were arranged of which 42 were in Mainland China. Local placements were held with government and private organisations. Those on the Mainland included the Three Gorges Project in Yichang, Beijing, Shanghai, Shenzhen and a special project in Guangxi (廣西). The Guangxi project was initiated by a group of professionals including our alumni who proposed to finance the redevelopment of a primary school in Da Lang Village, Rongshui County, Guangxi (融水縣・大浪鄉). A group of 18 students and some of our teaching staff volunteered to be involved in the project. A total of 3 trips were made to the village, the first being in April 2004 when our students went to look at the site in order to understand the design of the school. The second trip in June 2004 was to carry out site surveys and geotechnical information investigation. The students completed 2 design schemes of the school after their exams in June 2004 with the help of professional architects. In July 2004, they returned to the village to present their designs and complete the construction drawings. Our students were fortunate to receive external donations to sponsor some of their travel costs. The students themselves will each donate a book to the school in September, when its construction is expected to commence.

◆ Alumnus Ir C.F. Lam (graduated 1986) became Chairman of the Hong Kong Waste Management Association for 2003-04, and was also Chairman of the Symposium on Advances in Thermal Waste Treatment Technology held on 19 March 2004 at the City University of Hong Kong.

◆ The Third Lumb Lecture entitled “Geotechnical Challenges in Hydropower Development in China” will be delivered by Professor C.F. Lee, Pro-Vice Chancellor of HKU on 6 October 2004 at the Hong Kong Convention and Exhibition Centre, Hong Kong. Admission is free and no registration is required. There will also be a post-lecture tour to the Three Gorges. For more details visit: http://www.hku.hk/civil/lumb_lecture or email: lumb@hkucc.hku.hk.

◆ The 4th International Symposium on Environmental Hydraulics & 14th Congress of the Asia Pacific Division of the International Association on Hydraulic Engineering and Research (IAHR) will be held between 15-18 December 2004 at the Sheraton Hotel, Kowloon. For more details visit: http://www.hku.hk/civil/iseh&iahr-apd2004 or email iseh4@hkucc.hku.hk.

◆ The Centre for Infrastructure and Construction Industry Development (CICID) of The University of Hong Kong and The Civil Division of the Hong Kong Institution of Engineers will jointly organise a conference on “Public Private Partnerships - Opportunities and Challenges”. This is scheduled for Tuesday 22 February 2005 at the Hong Kong Convention and Exhibition Centre in Hong Kong. The conference aims at (a) providing a timely forum for sharing and discussing the potential feasibilities, strengths and weaknesses of various types of Public Private Partnerships (PPP) in different civil engineering and building infrastructure project scenarios; and (b) identifying innovative and good PPP practices that maximize the benefits and reduce the risks of all relevant stakeholders. The conference will be addressed by both local and overseas speakers with special experiences in this emerging topic. For more details of the conference please visit http://www.hku.hk/cicid/ or http://www.hkiecvd.org.
SMILE-SMC First Dissemination Workshop

Date: 18 September 2004 (Saturday)
Time: 9:00 am to 12:45 pm
Venue: Room S22, Admiralty Learning Centre, 3/F, 18 Harcourt Road, Hong Kong
Cost: Free of charge
Theme: “Strategic management through structured knowledge capturing and archiving for sustainable SMC Development”

The purpose of the workshop is to disseminate initial findings and developments in this on-going project as outlined in this newsletter earlier. Preliminary findings such as the special requirements of the SMCs, their preferences, and so forth will be presented. Pilot modules of the proposed web-based system will also be demonstrated at the workshop. Feedback generated will be used for improving developments in the next stage.

For enquiries and registration, please contact Dr. Motiar Rahman through email: mmrahman@hkucc.hku.hk

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