香港城市大學
City University of Hong Kong

Knowledge Transfer Office
# Newsletter
Transforming Knowledge Into Practice

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# Symposium Recognizes CityU's Efforts in Non-tech Knowledge Transfer


*(From left) Dr Lee Tak Yan, Prof Samuel Ho, Dr Annis Fung, Dr Kam Ping-kwong, Prof Bacon-Shone, Prof Lo Tit Wing, Prof Daniel Wong, and Mr Mak Hoi Wah*

The College of Liberal Arts and Social Sciences (CLASS) organized its first-ever Knowledge Transfer (KT) Symposium and KT Awards presentation ceremony on 25 September 2012. Professor John Bacon-Shone of Hong Kong University and Dr Tse Ka Kui were invited to deliver keynote speeches at the symposium.

The symposium was kickstarted with welcoming remarks from Professor Kingsley Bolton, Acting Dean of CLASS. Also speaking at the opening was Professor Gregory Raupp, Vice-President for Research and Technology.

Two keynote speakers, Professor John Bacon-Shone of Hong Kong University and Dr Tse Ka Kui were invited to speak at the symposium. Professor Bacon-Shone is currently Associate Dean (Knowledge Exchange) of Social Sciences at the University of Hong Kong. Dr Tse Ka Kui is chairperson of a number of social enterprise organizations, among them the Hong Kong Social Entrepreneurship Forum, Dialogue in the Dark HK Ltd, Social

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**Technologies for Licensing Database**
Browse our database to find a technology that suits your needs
http://www6.cityu.edu.hk/kto/Technology-Licensing.html

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Enterprise Book Hub and the Enspiral Community Interest Company.

At the symposium, the KT award winners — Dr Annis Fung, Professor Samuel Ho, and Dr Kam Ping-kwong — were recognized for the impact of their work.

Dr Annis Fung was principal investigator of Project CARE (Children and Adolescents at Risk Education), a research and advocacy project targeting children and adolescents vulnerable to bullying at schools. With the participation of about 77 secondary and primary schools, the scheme identified potential aggressors or victims for clinical intervention and to raise public awareness on the issue. Students, parents, social workers, and teachers joined in the research and training sessions for enhancing their counselling skills as well as crisis intervention of school bullying. As a result of clinical intervention, aggressive behaviour among the aggressors was significantly reduced while the confidence and assertiveness of victims were significantly bolstered. Project CARE won the Quality Education Fund Outstanding Project Award in 2008, and was awarded a funding support of about HK$11,000,000 over the past five years.

Professor Samuel Ho's Hospital Authority Resilience Project aims to enhance the resilience of Hospital Authority (HA) healthcare workers in the face of potential crises as well as enhance their overall level of positive emotions. According to research, chronic stress is one of the most concerned issues amongst medical staff, and building resilience has been one of the prominent stress management skills employed over the past decade. Educational materials, assessment, interactive exercises, educational workshops, and individual psychotherapy were the major deliverables of the project.

Dr Kam's winning project is titled "Transferring and Promoting the Skills in Leading Group Games — a collective book project with CityU social work students". In this project, Dr Kam and his 43 students collaboratively developed group games for use in Hong Kong much welcomed by local and mainland social work practitioners. The book project was preceded by training workshops on leading group games which culminated in the publication of a series of printed materials, including a book named *Facilitation Skills for Group Games — from concept to practice*. The book was a bestseller in 2009 to 2010, and has undergone seven reprints since its initial publication.

The following projects, funded by the KT earmarked grants, were also presented at the symposium:

- Action Counselling, by Professor T Wing Lo (Department of Applied Social Studies)
- An Interactive Human-Machine Dialogue System for Public Health in Hong Kong, by Dr Alex Fang (Department of Chinese, Translation and Linguistics)
- Capacity Building for Hong Kong-Shenzhen Collaboration in Qianhai, by Professor Linda Li (Governance in Asia Research Centre)
- Case Studies to Support Clinical Teaching in Counsellor Education: On Elicitation and Textual Re-presentation of "Clinical Knowledge" of Experienced Counsellors, by Dr Kwong Wai Man (Department of Applied Social Studies)
- Climate Policies: A Guide for Local Governments, by Dr Taedong Lee (Governance in Asia Research Centre)

*Dr Tse Ka Kui*

# CityU Scientists Shed Light on Advances in Environmental Technology

Ingenious technologies tackling pollution and food waste were disclosed in a technology transfer forum organized by the Knowledge Transfer office (KTO). Over 80 people attended the forum held on 15 June 2012. Below is a summary of the technologies.

## Ozone catalytic oxidation (OCO) technology for degradation of dye in water

**Dr Oscar Hui**

***Department of Systems Engineering and Engineering Management***

Dr Hui and his team have successfully shown that dyes from waste water can be removed efficiently by using nanoporous materials. Compared with other alternative treatment methods,


*Dr Oscar Hui*

*(Continued on next page)*

Dr Hui's OCO technology boasts better removal efficiency and lower energy consumption. The technology owes its strength to the combination of adsorption, ozonation and catalytic oxidation, the use of mesoporous materials, and the capacity to convert dyes into carbon dioxide and water. On top of water pollution, Dr Hui also engages in air treatment research based on photocatalytic oxidation and plasma-assisted oxidation technologies, LEDs lighting, Li-battery, supercapacitor and fuel cell electrodes.

### Air pollution measurement and control: technologies to meet environmental chanllenges

**Dr Zhi Ning**

***School of Energy and Environment***


*Dr Zhi Ning*

Dr Zhi Ning and his team have developed Hong Kong's first-ever mobile platform for chasing and analyzing real-time vehicle emission using fuel carbon balance method. The on-road plume chasing and analysis system (OPCAS) distinguishes itself by its adaptability and speedy analyses: it can be installed on a wide variety of vehicles and acquire target vehicle emission rates within one to two minutes. Such features enable the OPCAS to track down high emitters on the road and reflect the impact of road conditions on dispersion of pollutants. The system is suitable for industrial, monitoring, and research uses.

### Valorization of unconsumed bakery waste from Starbucks Hong Kong for the sustainable production of chemicals and materials

***Dr Carol Lin***

***School of Energy and Environment***

*Dr Carol Lin*

Dr Lin's project, funded by the Innovation and Technology Fund, aims to reduce food waste and facilitate the use of biomass in Hong Kong, thereby reducing the release of greenhouse gases and other airborne pollutants. The project explores the conversion of disposed coffee grounds and unconsumed bakery products into succinic acid and poly-3-hydroxylbutyrate (PHB) through bio-refinery. Succinic acid, a high value-added product of fermentation using sugar, has wide applications in food production and pharmaceuticals. While PHB, which is similar with polypropylene, can be developed into biodegradable plastics. The successful implementation of the project could shed new light on transforming food waste into useful chemicals or materials of high commercial and industrial values.

# CityU Innovations Exhibited at ICT Expo 2012

Fourteen CityU innovationas were showcased in the International ICT Expo organized by the Hong Kong Trade Development Council (HKTDC) from 13 to 16 April. The technologies on display covered a wide range of fields, including power electronics, photonics, wireless communications, the internet, telemedicine, video transcoding and video surveillance. Three CityU projects were featured in the Technology and Innovation Zone of the Hong Kong Electronics Fair 2012, held concurrently with the ICT Expo at the Hong Kong Convention and Exhibition Centre. For detail of exhibits, please refer to the table below.

The ICT Expo is one of the leading trade shows in the Asia-Pacific region. Last year, over 580 exhibitors from Australia, Canada, the Chinese mainland, India, the Philippines, and Taiwan attended the event, attracting about 30,000 local and international visitors.

Mr Victor Lau, Technology Transfer Officer of the Knowledge Transfer Office (KTO), who was present at the expo, said that visitors showed much interest towards CityU's technologies.

"Some industrial and business executives approached me for more information, and their response was quite positive," Mr Lau added.

*(Continued on next page)*

The CityU technologies exhibited at the expo are ready for commercialization. People interested in using the technologies can approach KTO for more information.

*A visitor looks at an exhibit as demonstrator explains its characteristics.*

| Name of project | Principal investigator | Department / Centre |
|---|---|---|
| A universal rate control scheme for video transcoding | Prof Sam Kwong | Department of Computer Science |
| Air purifier utilizing photocatalytic oxidation and plasma-assisted catalytic oxidation technologies* | Dr Oscar Hui | Department of Systems Engineering and Engineering Management |
| Industrialization and application of hard coatings and their preparation technique | Dr Lawrence Li | Advanced Coatings Applied Research Laboratory (ACARL), Department of Mechanical and Biomedical Engineering |
| LED replacement lamp driver with universal compatibility | Prof Henry Chung | Department of Electronic Engineering |
| Mobile video surveillance and cloud service* | Prof Jia Weijia | Department of Computer Science |
| Nanoporous materials for oil spill cleanup and filtering | Prof Lee Chun Sing | Department of Physics and Materials Science |
| Ozone catalytic oxidation-based wastewater treatment technology | Dr Oscar Hui | Department of Systems Engineering and Engineering Management |
| Reconfigurable beam steering active antennas for broadband communications* | Prof Chan Chi Hou | Department of Electronic Engineering |
| SiteWatcher – an efficient and effective phishing detection solution | Dr Liu Wenyin | Department of Computer Science |
| Stress testing simulator for wireless networks | Dr Wang Jianping | Department of Computer Science |
| Transparent white OLED for lighting | Prof Lee Shuit Tong | Centre of Super-Diamond and Advanced Films (COSDAF); left CityU recently |
| Use-IT-Easy: a low cost high performance mobile RFID platform | Prof Andrew Lim | Department of Management Science |
| ZigBee advanced metering infrastructure and energy management | Dr Tsang Kin Fung | Department of Electronic Engineering |
| ZigBee telemedicine ICT infrastructure | Dr Tsang Kin Fung | Department of Electronic Engineering |

* *Projects marked with an asterisk were displayed in the concurrent Hong Kong Electronics Fair*

# Other Trade Fairs Participated by CityU

CityU's inventions were also showcased in the following trade shows:

**Printed Electronics and Photovoltaics USA 2011**

The conference, held in Santa Clara California, focused attention on the latest trends in the solar cell sector. Dr Roy Vellaisamy's project onflexible organic RFID tags and smart sensors for food safety was exhibited at the event. Dr Vellaisamy is Associate Professor of the Department of Physics and Materials Science.

**Hong Kong International Medical Devices and Supplies Fair**

On display at the annual fair organised by the Hong Kong Trade Development Council were Dr Wang Zuankai's superhydrophobic surfaces for multifunctional applications, and Dr Raymond Lam's cell-based assays using microfluidics technology. Both of them are Assistant Professors of the Department of Mechanical and Biomedical Engineering.

# Research Institute from Amoy Visits CityU

*The delegation and representatives from CityU gather together for a group photo.*

The Amoy Institute of Technovation delegation visited CityU research facilities on 25 April 2012. The 18 delegates from Xiamen, China, toured the laboratories of the Centre of Super-Diamond and Advanced Films (COSDAF), the Advanced Coatings Applied Research Laboratory (ACARL), and the facilities of the Department of Systems Engineering and Engineering Management (SEEM) and the Department of Mechanical and Biomedical Engineering (MBE). The delegation was led by Mr Xiao Zhicong, Assistant to the Dean of the Institute and Vice-President of the Amoy Productivity Promotion Center.

*Mr Xiao presents a souvenir to CityU*

# Industrial Executives Visit CityU's Bioengineering Facilities

About 20 members of the Hong Kong Medical and Healthcare Device Industries Association visited the Mechanical and Biomedical Engineering (MBE) department on 9 March 2012.

The delegation was received by Professor Ning Xi, Head of MBE, who delivered a 15-minute presentation on the development and major research areas of the department. At the MBE laboratory, the delegates were shown several innovative research projects undertaken by the MBE researchers.

Below is a brief description of the presentations delivered during the visit.

### Professor Ning Xi

***Electrogastrogram measure system***

The Electrogastrography (EGG) Analysis System developed by Professor Xi records and analyses EGG, as well as supports the diagnosis of functional gastrointestinal disorders.

### Professor Dong Sun

***Robot-aided optical manipulation of biological cells***

Various manipulation tools with optical tweezers are developed for manipulation of cells at single-cell level.

### Dr Zuankai Wang

***Development of a microfluidic device for point of care CD4+T cell counting***

This project aims to develop a portable microfluidic device that provides semi-quantitative measurements by a simple read-out without the need for complex electrical or optical equipment.

***Develop a label-free microfluidic platform for circulating tumor cells isolation and enumeration***

The proposed integrated microfluidic-electrical platform supports label-free CTCs isolation and enumeration from unprocessed whole blood.

***Develop hierarchical hybrid surfaces for enhanced condensation heat transfer***

The bio-inspired surfaces to be developed may lead to the creation of novel materials for use in thermal and energy systems.

### Dr Raymond Lam

***A new generation of cell-based assays***

This technology provides better control of critical cellular environment compared to conventional cell-based assays.

***User-friendly cell isolation chip***

By using this technology, freshly extracted cells from human blood can be isolated at defined locations in the microfluidic chip for further analysis.

### Dr Xinrui Niu

***Biomechanics of biomedical device***

The project aims to study contact damages in biomedical devices with the principles of biomechanics.

# General Chamber of Commerce Visits ALiVE

Members of the Hong Kong General Chamber of Commerce (HKGCC) visited CityU's Applied Laboratory for Interactive Visualization and Embodiment (ALiVE) on 17 February, with support from the CityU Business and Industrial Club of the Knowledge Transfer Office.

Located in the Hong Kong Science and Technology Parks, ALiVE is a 1,000 $m^2$ laboratory run by the School of Creative Media to support interdisciplinary research and showcase innovation in creative media. The laboratory, officially opened in June 2010, is equipped with advanced apparatuses and installations for researching new modes of immersive interactive experience relevant to culture, entertainment, education, and industry.

*Visitors experience first hand the wonder of multimedia art*

# Seminar on US Patent Law

A seminar on US and Chinese patent laws held by the Knowledge Transfer Office on 24 May 2012 attracted 56 participants. Dr Albert Chan, Principal of the Law Offices of Albert Wai-kit Chan, was speaker of the event. Specifically, Dr Chan talked about the patent law reform of the US, and how best inventors can protect their inventions with the enforcement of the newly revised regulations.

The changes to the US patent law shall be implemented later this year and in early 2013. Among the changes are the introduction of the "first to file" principle, expanded definition of prior art, and a new derivation proceeding.

Also present at the seminar was Professor Raupp, Vice-President for Research and Technology, who presented a souvenir to Dr Chan.

*Prof Raupp (left) presents a souvenir to Dr Chan*

# Oxford Experts Share Entrepreneurship Tips

Thirty-seven students and researchers attended the entrepreneurship workshop organized by the Knowledge Transfer Office on 17 May 2012. The workshop was led by ISIS consultants, Mr Terry Pollard and Ms Ya-hsin Shen. ISIS is a technology transfer company set up by Oxford University. The one-day workshop covered themes ranging from evaluation of technology projects and marketing to assessment of markets and clientele.

The morning session opened with a lecture on patents and intellectual property protection, succeeded by presentation of success stories of Oxford-based entrepreneurs. Useful tips on promotion by publications, multimedia and the internet were also mentioned. The workshop ended with a session on how technologies were evaluated for their commercial viability.

*(Continued on next page)*

*Mr Terry Pollard and Ms Ya-hsin Shen of ISIS.*

*Dr Mu Yuanyuan*

Dr Mu Yuanyuan, Senior Research Assistant of the Department of Chinese, Translation and Linguistics, attended the workshop and was appreciative of the workshop's relevance to her research.

"My field of research is translation and computer-aided translation and language teaching. Enriching my entrepreneurship skills will help me convert the intellectual property of my research into practical solutions or products, which are effective means of knowledge transfer," Dr Mu said.

*Ms Sylvia Rao*

Another participant, Ms Sylvia Rao, admitted that although entrepreneurship is not closely related to her field of study, she is set on becoming a successful entrepreneur since a young age.

"I think it is personally very useful to learn about some success stories of startups and ways to protect one's innovations. I also want to know what organizations lend support to budding entrepreneurs," said Ms Rao, an undergraduate in Quantitative Finance and Risk Management.

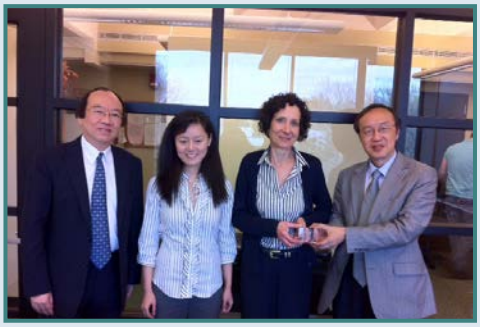
# Tech Transfer Officers Visit Overseas Universities

A CityU delegation visited the technology transfer offices of three universities in North America to learn more about their best practices in knowledge transfer and commercialization. The three offices were namely the USC Stevens Institute for Innovation of the University of Southern California, the Office of Technology Licensing of Princeton University, and the McMaster Industry Liaison Office of McMaster University.

The CityU delegation was led by Mr H Y Wong, Associate Vice-President for Knowledge Transfer, Mr David Cheung, Associate Director of the Knowledge Transfer Office, and Mr Tomson Lee, Senior Technology Transfer Officer.

Commenting on the trip, Mr H Y Wong said, "The visits to the three universities were very fruitful. We saw how they cultivated a conducive environment for knowledge transfer that bore good impact on the communities they served."

The delegation had thorough discussion on knowledge transfer strategies, intellectual property management, industrial liaison, and outreach.



*(From left) Mr David Cheung; Dr Shan Wan and Ms Laurie Tzodikov of Princeton University; and Mr H Y Wong.*

*(From left) Mr David Cheung; Dr Karen Kerr of USC; and Mr H Y Wong.*

*(From left) Mr H Y Wong; Dr Gay Yuyitung, Mr Glen Crossley and Mr. Paul Grunthal of McMaster University; and Mr David Cheung.*

# Granted Patents

### Method for encoding a plurality of video signals into a single video signal

China patent number: ZL200910204667.2

Inventor: Dr Peter Tsang

The technology presented in this patent supports the encoding of a plurality of video signals into a single signal such that multi-view 3D signals can be distributed, compressed, and recorded as 2D video signals are. Compared with the alternative N-tiles format, the new method can preserve the full resolution of contents that are either stationary or slow-moving over a certain period. However, the remaining contents which contain heavier motion components are represented with the N-tiles format, upon the assumption that viewers are less attentive to the fine details in motion pictures.

### Organic electrominescence device

US patent number: 8048541

Inventors: Professor Lee Shuit-tong (ex-CityU staff)
Professor Lee Chun-sing (Department of Physics and Materials Science)
Professor Wang Peng-fei (ex-CityU staff)
Dr Xie Zhi-yuan (ex-CityU staff)

Prof Lee and his research team have developed an electroluminescence (EL) device that uses Neutral red and its derivatives as the guest material of dopant. The invention is superior to many red-emitting OLEDs which show significant reduction in efficiency as current density or dopant concentration increases. The present dopant is particularly suitable for passive-matrix displays which require a high excitation density. The materials provided by this invention are easy to prepare and hence cost-effective.

### Wideband antenna

China patent number: ZL200610139681.5

Inventors: Professor Edward Yung (Department of Electronic Engineering)
Dr Wong Hang (State Key Laboratory of Millimeter Waves)
Ms Lau Pui-yi (ex-CityU staff)

The new technology described in this patent relates to a compact wideband patch antenna compatible with a wide range of wireless communication technologies such as 2G, 3G, wireless LAN, Bluetooth, ZigBee, and WiMAX etc. The new antenna emits omni-directional radiation and it is vertically polarized. The critical components of the antenna include a square disc feed, four shorting strips and an upward folded wall. The antenna's patented design facilitates its use in automobiles.

### Magnetoelectric coupling device

China patent number: ZL200610068282.4

Inventors: Dr Lu Sheng-guo (ex-CityU staff)
Dr Xu Zheng-kui (Department of Physics and Materials Science)
Mr Guo Shi-shang (ex-CityU staff)

The novel magnetoelectric (ME) coupling device comprises a flextensional Cymbal located between two magnetostrictive $Tb_xDy_{1-x}Fe_2$ (Terfenol-D) plates. This new invention is the first ME device to be equipped with a piezoelectric Cymbal, and it displays a more significant ME effect than other similar products owing to the coupling between the large magnetostriction of Terfenol-D and the high piezoelectric response of Cymbal. The ME device can be used as current and magnetic field sensors, transformers and gyrators, and memories and microwave devices.

# CityU Business and Industrial Club
# 城大工商协进会

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