

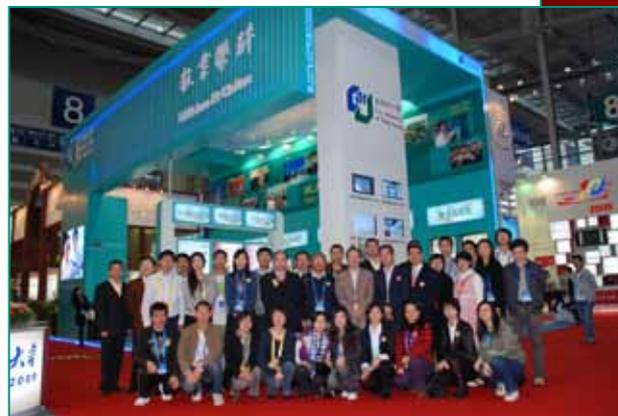
CityU Won Excellent Product Award in China Hi-tech Fair

In the annual China Hi-Tech Fair, CityU won an Excellent Product award, alongside an Excellent Organizer award and an Excellent Pavilion award.

The Secure Mobile Messaging software tool, developed by Dr Duncan Wong and Mr Xiong Xiaokan of the Computer Science Department, earned the University one of the six Excellent Product awards contested by about 300 entries. The software tool provides a user-friendly and secure way to send and receive encrypted messages through mobile phones.



(From left to right): Dr Cheng Shuk-han of the Biology and Chemistry Department; Mr Xiong Xiaokan of the Computer Science Department; Mr Tomson Lee of the Knowledge Transfer Office



CityU staff and students pose in front of the CityU booth

The Fair was held from 16 to 21 November 2009 in the Shenzhen Convention and Exhibition Center. Twenty-seven projects from the University were on display, covering fields that include energy and environmental protection, IT, electronics and telecom, biochemistry, new materials and testing technologies for food and environmental safety.

The Excellent Organizer award recognized CityU's efforts in preparing for the exhibition, while the Excellent Pavilion award acknowledged the outstanding design of the CityU booth. It is the seventh year in a row that CityU has been awarded the Excellent Organizer award. The University is also a four-time winner of the Excellent Pavilion award.

"The China Hi-tech Fair is the largest event of its kind in China. The accolade won by the University in the Hi-tech Fair is a testimony of CityU's edge

in research and knowledge transfer," said Mr H Y Wong, Associate Vice-President of Knowledge Transfer.

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Technologies for Licensing Database

Browse our database to find a technology that suits your needs
www6.cityu.edu.hk/kto/
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Join CUBIC

CUBIC regularly organizes seminars and gatherings where members can mix and mingle with CityU researchers and industrial leaders. Please scroll to the last page for the membership form.

Chemosensing for Food and Environmental Safety



While food safety and drug tests make headlines in Hong Kong, the science behind them is hardly ever noticed. Scientists in biochemistry are in fact working all out to develop cheaper, easier to administer methods of screening contaminants. And among them are Dr Vincent Ko and Dr Michael Lam of CityU's Biology and Chemistry Department. The technologies developed by both Dr Lam and Dr Ko can be broadly categorized as chemosensing.



Dr Michael Lam

In the Technology Transfer Forum organized by the CityU Business and Industrial Club (CUBIC) on 14 October 2009, the two researchers shared their experience in developing chemosensing technologies for food safety control and environmental monitoring. In chemosensing, chemosensors are

used to identify targeted materials, acting as a "detective" of substances which in real life scenarios can be difficult to pick up.

A typical chemosensor is made up of two parts: first, the receptor that picks up the stimulus from the targeted substances or analytes; second, the transducer that converts the stimulus to a form ready for recognition and reporting. The presence of analytes can be reported by various media and one of them is luminescence. Luminescent chemosensors, such as the ones developed by Dr Ko, will elicit luminescence once the analytes are detected.

You may imagine chemosensors, usually organic in nature, as receptors designed to hold specific substances. For example, if you peep at Dr Ko's chemosensors under a high-power microscope, you will see the organic sensors engineered to bind mercury and lead ions. When testing for heavy metals or pollutants in environmental samples, the samples are dipped in solutions containing the



Dr Vincent Ko

corresponding chemosensors. The presence of targeted pollutants will cause the reporters, attached to the sensors, to give off a luminescent glow, the hue of which is determinable even by the naked eye.

Considered a sub-type of chemosensing, molecular chemosensors involve the use of polymer matrices sculpted to fit the targeted substances specifically (see Fig 1). A major difference between typical chemosensors and molecular chemosensors is that molecular chemosensors recognize analytes by molecular shape rather than chemical functionality. Made of plastic, the polymer matrices of molecular chemosensors are reusable, physically and chemically stable, and easy to engineer for specific analytes, but

Figure 1 Formation of a molecular imprinted polymer matrix

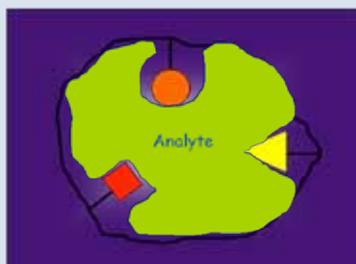


Figure 1a:
Polymer matrix is formed by placing monomers around the template or analyte

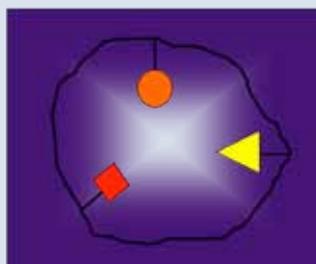


Figure 1b:
The template is washed off, leaving behind the polymer matrix

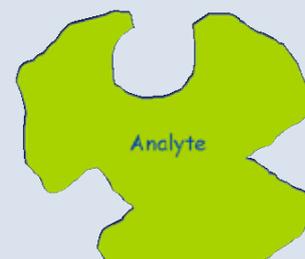


Figure 1c:
The matrix in Fig 1b will only attract specifically shaped analytes

they are not tagged with reporters. To extend the application of molecular chemosensors, Dr Lam developed a technology known as indicator displacement that makes the presence of targeted substances noticeable. A patent application related to the technology is being filed.

During the presentation, Dr Lam collected air samples from a bag in which a fish had been left rotting overnight. The air samples were then injected into

a solution suffused with chemosensing materials for detecting gaseous by-products of decomposition. The fact that gaseous emission is sufficient to bring on visible signals means monitoring food freshness can be conducted on site with ease.

Chemosensing can be applied to the quality control of food production and packaging, as well as rapid screening of hormones, proteins, and drugs. It can also be applied to self-help diagnostic

test kits for testing pregnancies and blood glucose levels.

The Technology Transfer Forum attracted about 60 participants coming from fields such as DNA microarrays and diagnostics, drug development, biotechnology devices, cosmetics, and food safety testing. It is a regular event whereby CityU staff can impart to CUBIC members, mainly industrialists and executives, their inventions suitable for commercialization.

Wine Tasting for CUBIC Members

CUBIC organized its first ever Manufacturing Special Interest Group wine tasting party on November 12 2009 at the Staff Lounge. A diversion from the usual tea gathering, the wine tasting party attracted about 60 participants, many of whom were industrialists and executives from fields that include manufacturing solutions and consultancy, automation, components and parts, electronics, optical and OLED manufacturing, and telecommunications.



Dr Lawrence Li of the Manufacturing Engineering and Engineering Management Department, also Vice-Chairman of the Manufacturing Group

Mr Francis Li, Chairman of the Manufacturing Group

Seasoned Industrialists Visit CityU Facilities

Over 10 executives, entrepreneurs and engineers visited CityU on a tour organized by the Hong Kong Critical Components Manufacturers Association (HKCCMA). The tour underscored the attention industry has accorded to the University. The group, escorted by representatives



From left to right: Mr Tomson Lee, Senior Tech Transfer Officer of KTO; Mr David Cheung, Associate Director of KTO; Mr Thomas Tang, Chairman of HKCCMA; Mr H Y Wong, Associate Vice-President (Knowledge Transfer)

Visitors at the RCW

from the KTO, visited the Wireless Communications Research Centre (RCW), the Optoelectronics Laboratory, the Centre for the Electronic Packaging and Assemblies, and the Failure Analysis and Reliability Engineering (EPA) Centre. The participants were impressed with CityU's

facilities and research excellence, which assured them of CityU's desirability as a partner of commercialization.

Established in 1998, the HKCCMA has a membership of about 60. The critical components industry produces

high precision parts such as LCD, magnetic heads, semi-conductors and optical lenses. There are about 1,000 local manufacturers in the critical components industry, engaging the services of 500,000 employees in Hong Kong and the Pearl River Delta region.

Summary of Recently Licensed Technologies

In the third and fourth quarters of 2009, three licensing deals were clinched with organizations from both the private and public sectors, including a local hospital and an international IP agent. Specifically, the licensing deal with the IP agent has brought to the University a multi-million dollar revenue.

Bulk Purchase of Patents by IP Agent

Sixteen CityU inventions were sold to an international IP agent that acquires and bundles patents for sale or licensing. Although the patents were sold rather than licensed, CityU is still entitled to 15 percent of the licensing income derived

from the exploitation of the patents acquired by the licensee company. The multi-million dollar revenue derived from this transaction will be used to recoup patent costs and the remainder be distributed to inventors and their departments / units according to the University's IP policy.

3D Display Technology Aids Surgery Training

The 3D display technology developed by Dr Peter Tsang of the Electronic Engineering Department was licensed to a local hospital for developing a new endoscope with multiple cameras whose plural video signals can

generate stereoscopic images. The new stereoscopic endoscope shall be used in surgery training.

Barrier-free home entertainment

By using DLNA technology, Prof Leung Shu-hung of the Electronic Engineering Department has developed a software tool that connects household electronic and electrical devices, such as audio-visual products, to make them interoperable. Prof Leung's invention was licensed to a home entertainment products company.

Granted Patents

Ion Source With Upstream Inner Magnetic Pole Piece (US7,589,474)

Prof Paul Chu of the Physics Department and his team have invented an ion source, an electromagnetic device, that emits wide and high current ion beams for surface treatment. The ion beams can be used for cleaning, activation, polishing, etching, and thin film deposition. Compared with other similar products, Prof Chu's ion source features better configuration, and magnetic circuit and fields. Its ion beams also possess a larger cross-sectional area. With a high efficiency of ionization, 60 to 90 percent of the discharge current can be converted into an ion beam current, while the conversion rate of a typical ion source is only about 20 to 25 percent.

On-chip Monitoring of Cellular Reactions (US7,560,267)

To facilitate accurate and easy cellular experiments, Prof Michael Yang and his research team of the Biology and Chemistry Department have invented an apparatus and methods based on microfluidics biochips for the transportation of cells and formation of a controlled concentration gradient. In cellular experiments, chemical solutions of descending concentrations are serially applied to specific cells to test cellular reactions. On-chip monitoring of cellular reactions has great potential for automating such experiments, thereby increasing the quantity of such experiments that can be done. This invention may be applied in blood cell analysis for disease diagnosis and in *in vitro* drug screening for the pharmaceutical industry.

CityU Business and Industrial Club

城大工商協進會

Membership Application Form



Name of Applicant (*Dr / Mr / Ms / Miss) _____ * delete as appropriate

中文姓名 _____

Position _____

Company Name _____

Business Address _____

Business Nature _____

Telephone (Office) _____ (Mobile) _____

Fax _____

Email _____

Please tick the appropriate box(es) below if you want to obtain the relevant application information for:

- 1) CityU Library Borrower's Ticket (\$1,000/year)
- 2) CityU Sports Complex User Card (\$1,050/year)
- 3) CityU Visa Card (free)

Enquiries:

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I _____ (name of applicant) hereby apply for membership of the CityU Business & Industrial Club (CUBIC). I confirm that the Information furnished above is complete and accurate and it can be used by CUBIC for membership related purposes.

Signature: _____

Date: _____

Please return this form by post to Knowledge Transfer Office, City University of Hong Kong, Tat Chee Avenue, Kowloon or by fax to (852) 2265 8028. (3.2009)

