

Life Sciences 生命科學

Orthokeratology — a promising solution for myopia 角膜矯形術 — 近視患者救星



The children who participated in the trials wore corrective contact lenses while sleeping to slow down the progression of their myopia.

參加試驗的兒童每晚睡眠時戴着矯視鏡片，以減慢近視加深的速度。

Clinical trials by PolyU optometry expert show that orthokeratology is effective in refractive vision correction, astigmatism reduction and myopia control.

理大視光學專家進行的臨床試驗顯示，角膜矯形術有效減低近視和散光，以及控制近視加深。

Prof. Pauline Cho
曹黃惠華教授



Myopia (or shortsightedness) is a refractive defect of the eye in which collimated light produces an image focus in front of the retina. A recent four-year study conducted by Prof. Pauline Cho from the School of Optometry and her research team concluded that orthokeratology not only corrects refractive error but is also effective in slowing the progression of myopia.

Orthokeratology is a non-surgical means of correcting vision by wearing specially designed rigid contact lenses made from high oxygen-permeable material during sleep. The lens modifies the corneal shape and corrects the focus of the eye to rectify the wearer's vision. If successful, the wearer will have clear vision without using any vision aids for the rest of the day.

The research team began two clinical trials in 2008. The first was the ROMIO (Retardation of Myopia in Orthokeratology) study, the first-ever randomized, single-masked study to investigate the effectiveness of orthokeratology for myopia control in children. Seventy-seven children aged 7 to 10 with myopia of not more than 4.00D were randomly assigned to either an orthokeratology or a spectacle group. At the end of the 24-month study, the average increase in eyeball length in the orthokeratology group was 0.36mm, whereas in the spectacle group it was 0.63mm. The study demonstrated that the increase in eyeball length was about 43% slower in children who wore the orthokeratology lenses than in those who wore spectacles.

The second study was the TO-SEE (Toric Orthokeratology-Slowing Eyeball Elongation) study, in which 37 children aged 6 to 12 with myopia of not more than 4.50D and astigmatism between 1.25D and 3.50D participated. It was found that toric design orthokeratology effectively reduced astigmatism by 79% after one month of wearing the lenses. By the end of the 24-month study, the participants' eyeball length had increased by only 0.31mm, confirming the slowing of myopic progression.

With these results, orthokeratology has been established as a safe and effective solution for vision correction and myopia control.

近視的成因，是由於眼睛屈光系統的折射出現異常，以致視物不能正確地投射於視網膜上。最近，理大眼科視光學院曹黃惠華教授與其研究團隊，用超過四年時間進行研究，證實「角膜矯形術」在矯正視力的同時，亦能有效控制近視加深的速度。

角膜矯形術是一種非手術性的矯視方法。患者於夜間睡眠時佩戴一副特製的高透氧度硬性隱形眼鏡，以逐漸改變眼球角膜弧度，藉此矯正近視。如效果理想，患者於日間將不需要依靠眼鏡或隱形眼鏡的輔助，都能擁有清晰的視力。

自二零零八年起，研究團隊開展了兩項研究。第一項研究名為ROMIO，這是全世界首個以隨機方法，針對兒童而進行的單盲角膜矯形術的研究。七十七位年齡介乎七至十歲、近視在4.00D以下的兒童，被隨機地分配到角膜矯形組或佩戴眼鏡組。經過二十四個月的時間，角膜矯形組的兒童平均眼球長度增長為0.36毫米，而佩戴眼鏡對照組兒童的平均眼球長度增長則為0.63毫米。結果顯示角膜矯形術能有效減慢兒童眼球長度增長速度達43%。

在第二項名為TO-SEE的實驗中，三十七位年齡六至十二歲、近視不高於4.50D及散光在1.25D至3.50D之間的兒童參與試驗。結果顯示，使用者於佩戴散光角膜矯形鏡一個月後，其散光減少了79%。而於二十四個月後，他們的眼球長度只增加了0.31毫米，證明角膜矯形術可減慢近視的增長。

上述臨床試驗結果證實角膜矯形術是一種既安全又有效的矯視及控制近視的方法。◆

Life Sciences 生命科學

More Tai Chi, less fall

勤練太極 減少跌倒

After practising simplified Tai Chi for four months, visually impaired elderly found improvements in their balance control and head and trunk movements.

視障長者練習簡易太極操四個月後，身體平衡和頭部與身軀的轉動都大有改善。

A Tai Chi master teaches the simplified exercises to a visually impaired elderly.
太極導師指導視力有問題的長者學習簡易太極操。



Dr William Tsang (right) and Dr Amy Fu introduce "Tactile Tai Chi for the Visually Impaired".
曾偉男博士(右)與符少娥博士介紹「觸手太極操」。

Funded by the S.K. Yee Medical Foundation, Dr William Tsang and Dr Amy Fu of PolyU's Centre for East-meets-West in Rehabilitation Sciences have developed a set of Tai Chi exercises, simplified from Yang style Tai Chi 24 forms to 8 forms, to improve the sense of balance control and reduce the risk of falls in the visually impaired elderly.

In their study, forty seniors with visual impairment were divided equally into two groups. One group practised the simplified Tai Chi in 90-minute sessions, three times a week for 16 weeks, whereas the control group learned to play Djembe as a percussion activity. After four months, the Tai Chi participants showed significant improvements in their balance control and head and trunk movements compared to those in the control group.

As the visually impaired elderly learned the Tai Chi exercises, an 8-form Yang Style Tai Chi, through tactile guidance provided by the master, the set of exercises is named "Tactile Tai Chi for the Visually Impaired".

Dr William Tsang pointed out that "the exercises are suitable for visually impaired people of all ages, not just for the elderly". The research team has produced a DVD that provides a detailed introduction to the exercises.

The study's findings were published in the international journal *Age and Ageing*. They correlated with the results of another Tai Chi study conducted by the Centre in 2004, which affirmed that practising Tai Chi could help to improve the sense of knee-joint position.

理 大中西薈萃之康復科學中心的曾偉男博士與符少娥博士合力簡化楊家二十四式太極拳為八式，供視障長者練習，以改善身體平衡，並減低跌傷的機會。這項研究獲余兆麟醫療基金資助。

在研究中，四十位視力有問題的長者平均分成兩組，當中二十位以每節九十分鐘練習簡化太極操，每周三次，連續練習十六個星期；而對照組的長者則進行敲擊活動，學習非洲鼓。四個月後，研究顯示學習太極操的長者之身體平衡大有改善，而且頭部與身軀的轉動也較為靈活。

在學習過程中，視障長者透過導師觸手教導，因此這套拳法又稱為「觸手太極操」。

曾偉男博士表示：「『觸手太極操』適合不同年齡的視障人士學習，並不限於長者。」研究團隊已製作光碟詳細介紹這套拳法。

研究成果已刊載於國際學術期刊《Age and Ageing》。研究結果亦印證了中西薈萃之康復科學中心於二零零四年進行的另一項有關太極之研究，證明練習太極對改善膝關節的位置感覺有幫助。

Life Sciences 生命科學

Computer games speed up stroke patient recovery

電腦遊戲加快中風患者的康復進度



Dr Raymond Tong Kai-yu demonstrates how the software follows the movements of body joints.

湯啟宇博士示範該軟件怎樣追蹤人體關節的動作。

Innovative “KineLabs” body motion games enhance the effectiveness of rehabilitation treatment through training stroke patients’ motor skills.

KineLabs 創意體感遊戲透過訓練中風患者的運動能力，提升康復治療的效果。



The KineLabs games win a Silver Award in the Hong Kong ICT Awards 2012: Best Innovation and Research Award. KineLabs 軟件於2012香港資訊及通訊科技獎獲得最佳創新及研究獎銀獎。



Dr Tong (right) teaches a stroke patient how to play a body motion game. 湯博士（右）指導中風患者玩體感遊戲。

Stroke patients often need to perform repetitive body movements as part of their rehabilitation programmes. Dr Raymond Tong Kai-yu, Associate Professor in Biomedical Engineering, and his research team decided to turn these monotonous exercises into fun by developing a series of computerized body motion games. With the games integrated into stroke rehabilitation programmes, patients can enjoy the fun games in a 3D virtual environment while improving their balance, reaction and motor skills to enhance the effectiveness of treatment.

Winning a Silver Award in the Hong Kong ICT Awards 2012: Best Innovation and Research Award, this series of 3D computer body motion games encourages stroke patients to exercise their upper and lower limbs through fun-filled activities such as making egg tarts, cleaning the window panes of a tram and killing cockroaches.

Dr Tong explained, “We used a Kinect sensor to capture depth data that can reproduce the body skeleton and follow the precise movements of all of the body joints. Players are required to move their upper and lower limbs to match the pre-set body motion”. The system can also record and generate reports on the patient’s success rates and response times when performing different tasks, thus monitoring the progress of their stroke rehabilitation.

To install the KineLabs games, just connect a Kinect sensor to a PC and a TV/computer screen and download a free copy of the games and the user manual from www.polyu.edu.hk/kinelabs.

中風患者往往需要重複身體動作，以促進康復治療。有見及此，理大生物醫學工程副教授湯啟宇博士與研究團隊研發了一系列體感遊戲，將單調的運動變為有趣的康復電腦遊戲，更可結合中風康復療程，以提升治療的效果。玩家在3D虛擬環境中享受富趣味性遊戲之同時，亦可提升其平衡力、反應和運動能力，有助康復。

這一系列既有趣又富地道色彩的3D電腦體感遊戲，訓練中風患者的上肢和下肢，以改善他們的日常活動功能。遊戲包括：製作蛋撻、抹電車玻璃窗和踩蟑螂等。這套KineLabs創新軟件更在2012香港資訊及通訊科技獎獲得最佳創新及研究銀獎。

湯博士解釋：「我們利用Kinect感應器採集景深數據以重塑骨骼，追蹤人體關節的細緻動作。玩家可以透過遊戲移動上下肢，以達到訓練的預設標準。」這系統更可記錄玩家執行不同任務的成功率和反應時間，並利用資料製成報告，以監測中風患者的康復進展。

安裝KineLabs運動遊戲，只須將Kinect感應器與個人電腦及電視/電腦屏幕連接，並在以下網址免費下載遊戲和安裝手冊：www.polyu.edu.hk/kinelabs。

Technology 科技

Novel technique for data-mining in herbal medicines

提取中藥生物活性指標的創新技術

PolyU has developed a quantitative pattern-activity relationship (QPAR) technique that effectively and accurately identifies the bioactivity indicators of herbal medicines by inputting their chemical fingerprints and related bioactivity data.

理大開發了一種QPAR技術，只需輸入中藥產品的化學指紋圖譜和相關生物活性數據，便能有效及精準地找出有關產品內藏的生物活性指標。

This breakthrough was the result of efforts by a research team comprising Prof. Chau Foo-tim of the Department of Applied Biology and Chemical Technology, Dr Sze Man-yuen and Ms Ng Chun-har of the Department of Health Technology and Informatics, Prof. M. Kvalheim Olav of the Department of Chemistry (Chemometrics) at the University of Bergen (Norway), and Dr Lau Tsui-yan of Intertek Testing Services Hong Kong Ltd.

The QPAR technique solves two significant problems in the study of complex active mixtures such as herbal medicines. It provides a model for predicting total functional activities from chromatographic profiles, and identifies the features in the chromatographic fingerprint responsible for such activities. The technique greatly reduces the time, cost and labour needed to data-mine these two pieces of important information.

The research team found that the QPAR technique had a prediction capability of better than 92% in the total immunological enhancement bioactivity of *Radix Astragalus*. The technique also successfully predicted the antioxidant active fractions of *Radix Puerariae Lobatae* (Gegen) without the need to separate individual fractions.

QPAR can be applied to study samples of herbal medicines, food and agricultural plants, etc. Through data analysis, the bioactive, functional and toxic ingredients can be obtained much faster and easier. The quality of related products can also be evaluated based on their functional activities, as in the case for Western medicines.

This innovation won a Gold Medal at the 40th International Exhibition of Inventions in Geneva, Switzerland. It also took out the Best Submitted Scientific Presentation (Poster Session) award at the 5th International Functional Food Symposium.

這創新發明是一個研究團隊的努力成果。團隊成員包括：應用生物及化學科技學系周福添教授、醫療科技及資訊學系施文遠博士和吳春霞女士、挪威卑爾根大學化學學系（化學計量學）M. Kvalheim Olav教授，以及天祥公證行有限公司劉翠茵博士。

QPAR 技術突破性地解開了研究混合物（如中藥）生物活性時兩個重大的難題。此技術提供了一個模型，利用混合物的化學色譜圖找出其活性，亦可確認在色譜圖中那些化學部分能與生物活性有着關連。這技術大大減低了提取混合物中這兩項重要訊息所需的時間、成本及人力資源。

研究團隊發現，QPAR技術能準確地預測黃芪樣本對抗癌症免疫方面指標的能力高達92%。另外，無需在實驗室內進行任何分離來分離樣本內與活性關連的化合物組分，該技術亦能成功地預測到葛根中那些組分含抗氧化的能力和水平。

QPAR技術適用於中藥、食品及農產品等方面。透過數據分析，便可更迅速和容易地找出產品在活性上和功能上的成分，以及是否含有毒成分。另外，亦可根據相關產品的活性指標，來檢測它們的品質，就像西方醫藥一樣。

該發明在第四十屆瑞士日內瓦國際發明展中奪得金獎。此外，它亦於第五屆國際功能食品座談會中獲得最佳科學演繹獎（海報組）。

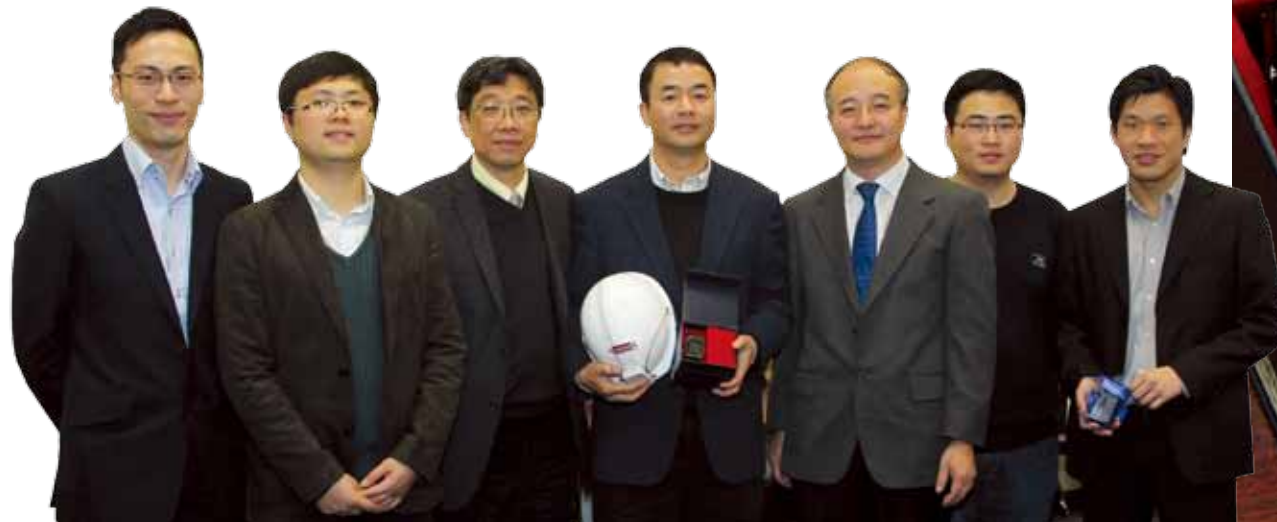


Prof. Chau Foo-tim (second from left) and his research team win a Gold Medal at the 40th International Exhibition of Inventions.
周福添教授（左二）與研究團隊在第四十屆國際發明展中奪得金獎。

Technology 科技

Work safe, work smart at construction site with PCMS

「雲建管」提升工地安全及工人效率



Prof. Li Heng of Department of Building and Real Estate (middle); Prof. Cao Jiannong, Head of Department of Computing (third from left); Prof. Ding Xiao-li, Head of Department of Land Surveying and Geo-Informatics (third from right); and other research team members

建築及房地產學系李恆教授(中)、電子計算學系系主任曹建農教授(左三)、土地測量及地理資訊學系系主任丁曉利教授(右三)及研究團隊的其他成員



Parts and accessories of the PCMS
「雲建管」系統的配件



The PCMS involves the installation of GPS sensors onto the helmets of construction workers.

在「雲建管」系統中，建築工人的頭盔裝了定位系統(GPS)感應器。

Using process simulation and positioning technologies, PolyU has developed a Proactive Construction Management System (PCMS) and is collaborating with industry to enhance construction safety and efficiency with PCMS.

理大利用虛擬模型和定位技術研發出「雲建管」系統，並與業界緊密合作，以提升建造業的安全及效率。

With the sophisticated use of process simulation technology and GPS positioning technology, researchers at the Department of Building and Real Estate's Construction Virtual Prototyping Lab have developed a Proactive Construction Management System (PCMS) to improve construction safety and enhance project efficiency.

Headed by Prof. Li Heng, who received a first-class technological innovation prize from the Chinese Ministry of Education for this breakthrough, the research team combined the application of building information modelling for project management with GPS sensors installed on the helmets of on-site construction workers.

The PCMS uses building information modelling to create a 4D model of a construction site as a control platform and carries out real-time tracking of the positions of workers and machinery. If there is any chance of a collision, the system will automatically alert site workers to the possibility of injury by giving warning signals through the chips built into their helmets.

On the project management side, the PCMS will automatically compare the 4D model with the actual site situation to monitor progress and the project's cost effectiveness. With this system, project managers can remotely monitor the real-time progress of workers on their computers and give orders to foremen/workers for corrective action before deviations occur.

建築及房地產學系建築虛擬模型實驗室的科研人員，利用精密的建築虛擬模型技術和定位系統技術，成功研發了一套名為「雲建管」的系統，有助提升建造業的安全及效率。

在李恆教授的領導下，科研團隊將建築模型技術應用於系統的項目管理方面，再配合在地盤工人配戴的頭盔中安裝定位系統感應器一併使用。李教授更憑此突破性發明獲國家教育部頒授國家科學技術進步一等獎。

在「雲建管」系統中，建築模型技術為建築項目提供了4D模型作為控制平臺，並可以實時監測地盤工人和重型機器的位置。如兩者有互相碰撞的機會，系統會立即透過頭盔內置的晶片，自動發出警示信號提醒工人，避免意外受傷。

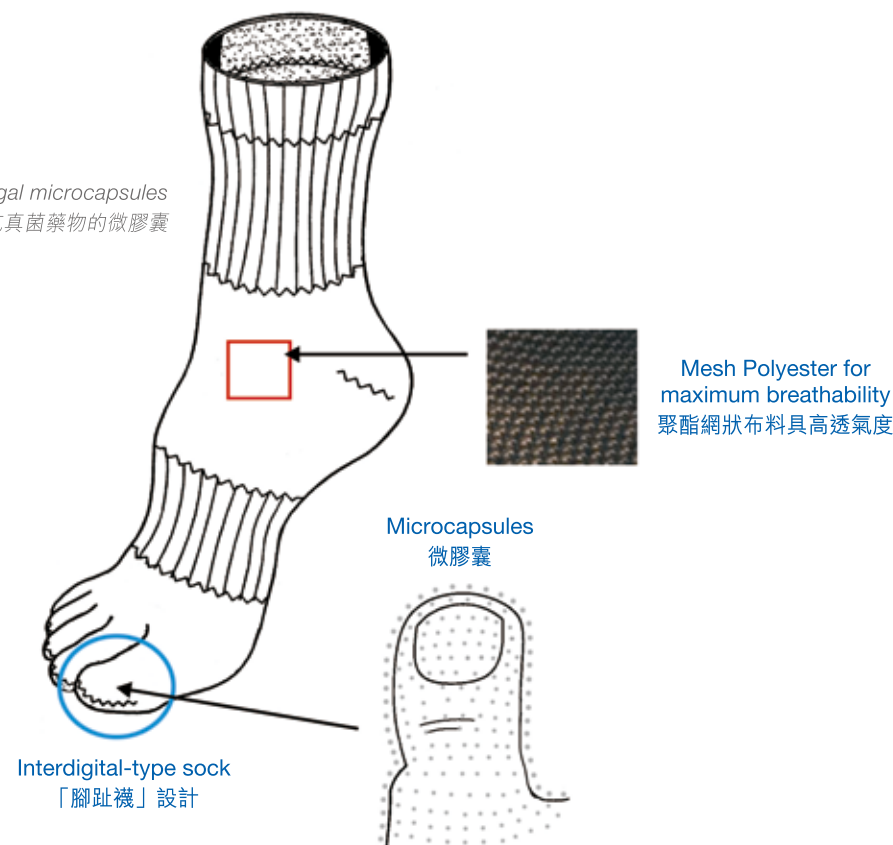
在項目管理方面，「雲建管」系統可以將工地的實際情況與4D虛擬模型自動對比，以便監察施工進度及控制成本效益。有了這個系統，項目經理就可以利用電腦實時遙遠監測工人的施工進展，並能向地盤工頭和工人發出指令，在偏差將要發生前糾正失誤。❖

Technology 科技

Special hygienic socks for *tinea pedis* treatment

特製衛生襪有助治療足癬

Hygienic socks with antifungal microcapsules
衛生襪上附有抗真菌藥物的微膠囊



Experts from PolyU's Institute of Textiles and Clothing have designed hygienic socks with antifungal microcapsules to increase the success rate of curing patients suffering from *tinea pedis*.

理大紡織及製衣學系專家研發出附抗真菌藥物微膠囊的衛生襪，可提升足癬患者的治療成功率。



Prof. Marcus Yuen Chun-wah (left) and Dr Joanne Yip Yiu-wan
袁進華教授(左)與葉曉雲博士

Tinea pedis (athlete's foot) is a common skin disease that affects a large proportion of the world's population. Recently, Prof. Marcus Yuen Chun-wah and Dr Joanne Yip Yiu-wan and their research team have developed hygienic socks for the daily pharmacological treatment of fungal infections. Developed through the use of microencapsulation technology, the socks help to increase the success rate of curing patients with *tinea pedis* and reduce the chance of relapse.

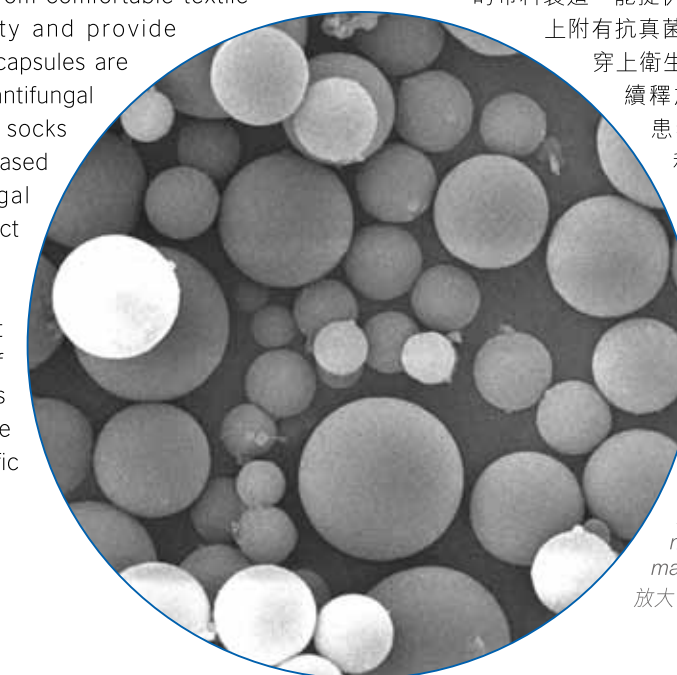
The interdigital-type socks are made from comfortable textile material with maximum breathability and provide excellent moisture management. Microcapsules are grafted onto the textile material, with antifungal agents encapsulated within. When the socks are worn, the antifungal agents are released to pharmacologically treat the fungal infection, thus reducing its irritating effect on the quality of daily life.

The invention won a Gold Medal at the 40th International Exhibition of Inventions in Geneva, Switzerland. It was also awarded a special prize from the Russian House for International Scientific and Technological Cooperation.

足癬(香港腳)是一種常見的皮膚疾病，世界上很多人都受它的影響。最近，袁進華教授和葉曉雲博士及研究團隊研發了一種衛生襪，可用作日常抗真菌的藥物治療。研究人員利用微膠囊技術製成這種衛生襪，有助提升治療足癬患者的成功率，並減少復發的機會。

以「腳趾襪」設計的衛生襪，採用高透氣度且舒適的布料製造，能提供有效的水份管理。布料上附有抗真菌藥物的微膠囊，當患者穿上衛生襪，抗真菌藥物就會持續釋放出來，以減低足癬對患者日常生活帶來的不便和影響。

該發明於第四十屆瑞士日內瓦國際發明展中奪得金獎，以及獲俄羅斯內務國際科學技術合作協會頒發特別獎。



Antifungal agents-loaded microcapsules with magnification
放大的抗真菌藥物微膠囊

Technology 科技

Lead-free environmentally friendly microrefrigerators

無鉛環保微型製冷器



Structure of the ferroelectric microrefrigerator
鐵電微型製冷器的結構

Using lead-free ferroelectric refrigerants, a PolyU mechanical engineering expert invented electro-caloric microrefrigerators.

理大機械工程專家利用無鉛鐵電製冷劑開發微型製冷器。

Dr Zheng Guang-ping
鄭廣平博士



The current trend towards reducing use of the refrigerant Freon is an important part of the fight against global warming and protection of the ozone layer. Compared with other refrigeration technologies, electro-caloric ferroelectric refrigeration is more efficient, cost effective and easy to implement.

Dr Zheng Guang-ping, Assistant Professor of the Department of Mechanical Engineering, thus developed lead-free ferroelectric ceramics that are environmentally friendly and practical for use as microrefrigerators. The microrefrigerators consist of electro-caloric ferroelectric refrigeration units 0.5-2mm in size. Each unit has 20-500 layers of ferroelectric refrigerant film. The refrigerants are lead-free and achieve a refrigeration effect of better than 4 J/g under applied voltages of 40-300V. Their energy efficiency is 86%.

These microrefrigerators can be used for cooling hot spots in high-power micro-electronic components, devices and products. The ferroelectric refrigeration methods and the ferroelectric refrigerants developed by Dr Zheng can be used to manufacture very light refrigerators and air conditioners in electric vehicles and hospitals.

This invention won a Gold Medal at the 40th International Exhibition of Inventions in Geneva, Switzerland.

為了減緩地球暖化和保護臭氧層，全球正趨向減少使用氟利昂製冷劑。無鉛鐵電材料的固態製冷技術，相對於其它機械製冷技術，有更佳的能量轉換效率、更高的成本效益，以及易於應用等優點。

有見及此，機械工程學系助理教授鄭廣平博士發明了以無鉛鐵電環保製冷劑，製造高製冷量的微型製冷器。微型製冷器是一種由無鉛鐵電材料與金屬電極交替而成的多層結構，大小為0.5-2毫米。每個製冷單元有20-500層鐵電製冷片，在無鉛製冷劑上施加40-300伏的周期電壓以實現優於4焦耳/克的製冷量，能量轉換效率優於86%。

這些微型製冷器可應用於微電子元件、儀器和產品中大功率器件降溫用途。鄭博士研發的鐵電製冷方法及鐵電製冷劑，可用以製造電動汽車及醫院內的微型雪櫃或空調器。

該嶄新發明於第四十屆瑞士日內瓦國際發明展中奪得金獎。

Business & Management 工商管理

Food cost increases trigger hotel sustainability gains

食物價格上揚

刺激酒店推動可持續發展



Researchers at the School of Hotel and Tourism Management (SHTM) have found that global increases in food prices have pushed Hong Kong hotels to enhance the sustainability of their food management practices.

酒店及旅遊業管理學院的研究人員發現，由於全球食物價格上漲，因而推動了香港的酒店在食品管理措施方面，加強可持續性的觀念。

In a recent research, Prof. Rob Law, Dr Catherine Cheung and Mr Murray Mackenzie of the SHTM have interviewed hotel food and beverage managers and executive chefs of luxury, mid-priced and economy hotels. They found that local hotels, while addressing cost increases and the common food wastage problem, do not compromise food quality.

The research revealed that the most effective strategies for addressing the situation involved the increased scrutiny of suppliers, enhanced staff training and internal communication, as well as the use of monitoring systems and environmental protection measures to reduce food wastage.

In particular, hotels need to invest in activities such as supplier evaluation, menu engineering that balances "high-cost food items with low cost commodities", quality audits, menu design reviews and quality training. At the same time, management systems can be introduced to control the environmental impact of hotel activities, which may affect food costs through the management of food waste, recycling and sustainability.

"Given that food costs are critical to any hotel's bottom line, the adoption of innovative practices and recognition of corporate social responsibility are ultimately the key to maintaining a competitive advantage in the highly competitive hospitality arena", the researchers commented.

酒店及旅遊業管理學院羅振雄教授、張玉艷博士及Murray Mackenzie先生最近在一項研究中專訪了幾位豪華、中檔和經濟型酒店的酒店餐飲經理及行政總廚。他們發現，本地酒店嘗試解決成本增加和普遍的廚餘問題，但並沒有放棄對食物品質的要求。

研究指出，處理該情況的最有效策略是加緊監察供應商、加強員工培訓和內部溝通，以及實行減少廚餘的監測系統和環保措施。

酒店必須在評估供應商、改良菜單來平衡「高成本食物與低價格食品」、品質審查、檢討菜單的設計，以及品質培訓等方面投放資源。同時，亦可引入管理系統以控制酒店活動對環境的影響，透過廚餘管理、回收和可持續性發展，食品的成本或許有所調整。

研究人員表示：「食品成本對任何一間酒店有否盈利是至關重要的，因此採取創新措施和履行企業社會責任，是在競爭激烈的酒店業中保持競爭優勢的最終關鍵。」

Business & Management 工商管理

SME Business Sustainability Index helps to promote CSR

「中小企可持續發展指數」有助提升企業社會責任



The index launch ceremony was officiated at by (from left) Prof. Edwin Cheng, Dean of PolyU Faculty of Business; Mr Joseph Wong, Founding Chairman of the Hong Kong SME Forum; Ms Christine Fang, Chief Executive of the Hong Kong Council of Social Service; Mrs Agnes Mak, HKPC Executive Director; Ms Patricia Lui, Principal Trade Officer of the Trade and Industry Department; and Prof. Timothy W. Tong, PolyU President. 該「指數」的發佈儀式由（左起）理大工商管理學院院長鄭大昭教授、香港中小企商會聯席會議創會主席黃鵬緒先生、香港社會服務聯會行政總裁方敏生女士、香港生產力促進局總裁麥鄧碧儀女士、工業貿易署首席貿易主任呂潔梅女士及理大校長唐偉章教授一同主持。

PolyU joined hands with the Hong Kong Productivity Council in compiling the Hong Kong SME Business Sustainability Index to promote CSR in Hong Kong.

理大與香港生產力促進局攜手推出「香港中小企企業可持續發展指數」，以推動企業社會責任在香港的發展。

PolyU's Department of Management and Marketing and the Hong Kong Productivity Council (HKPC) have jointly compiled the Hong Kong SME Business Sustainability Index to promote the understanding and adoption of corporate social responsibility (CSR) as a business model for achieving business sustainability in Hong Kong.

Through assessing the performance and achievement of the 40 best SMEs with proven records in undertaking CSR initiatives, the researchers compiled an index with information on the value of their CSR and sustainable development, their CSR management and projects, and their positive contribution to economic, social and environmental sustainability.

The mean score on the index was 58.30 on a 100-point scale, which indicates that local SMEs are in the initial stage of business sustainability. In particular, the manufacturing sector received a score of 64.72, reflecting that some business sustainability practices have been implemented, while the service sector scored 55.86, indicating that it is still in the early stages.

The index and the list of companies will be updated and announced annually, with the aim of promoting the concurrent growth of businesses and society through CSR engagement.

為了增進各行業對企業社會責任的認識，並鼓勵業界以此作為企業可持續發展的營商模式，理大管理及市場學系與香港生產力促進局共同編製了「香港中小企企業可持續發展指數」（「指數」）。

該「指數」是根據四十家獲公認在企業社會責任方面有優秀表現的中小企，透過分析其社會責任和可持續發展的價值觀、對企業社會責任的管理和項目，以及對經濟、社會和環境可持續發展的正面貢獻等三個範疇的表現和成效，經評估後編製而成的。

結果顯示，本港中小企的總體平均得分為58.30分（100分為滿分），處於企業可持續發展的起步階段。其中，製造業獲得64.72分，反映廠商已實行部分企業可持續發展措施；服務業得分為55.86，仍處於起步階段。

該「指數」將每年更新，而組成指數的公司名單亦會對外公佈，藉此推動中小企與社會同步可持續發展與成長。◆

Social Sciences 社會科學

Research on Putonghua assessment provides workable solutions for learning and teaching

普通話測試研究為教學提供解難方案

(from right) Dr Zhu Xinhua, Prof. Chan Shui-duen, Ms Lau Man-choi and Mr Yeung Kwan
(右起) 祝新華博士、陳瑞端教授、劉文采女士及楊軍先生



Edited by Prof. Chan Shui-duen and authored by Prof. Chan, Dr Zhu Xinhua, Ms Lau Man-choi and Mr Yeung Kwan, the book covers the planning and administration of language education and assessment, the selection and adjustment of listening comprehension materials, the phonological basis of assessing pronunciation, students' performance in listening, narrating and speaking, standardized expression and phonics.

The team's collaborative effort has not only yielded much research data but also provides workable solutions to the learning and teaching of Putonghua. The book follows the success of the previous Testing Unit publication, *A Study on Primary School Putonghua Proficiency Tests*.

Over the years, members of the Testing Unit have established a series of Putonghua assessments for university, secondary and primary students, and have conducted research projects on the curriculum, teaching and assessment of the Chinese language that are useful references for education and examination organizations of Hong Kong.

The Testing Unit of PolyU's Department of Chinese and Bilingual Studies has released a book entitled *Study on Secondary School Putonghua Proficiency Tests after a comprehensive research on Putonghua assessment*.

理大中文及雙語學系測試組在進行一項全面的普通話測試研究之後，出版了《中學普通話水平考試研究》一書。

此書由陳瑞端教授主編，主要作者為陳教授、祝新華博士、劉文采小姐及楊軍先生，透過實證研究，探討語言教學和語言測試的規劃與實踐、聆聽語料選擇和調整、語音測量音位學基礎、學生聆聽表現的評估、規範表達、語音間接表現、朗讀與說話表現等。

在研究團隊的努力協作下，這項研究不但收集到大量的數據，而且為普通話的教與學提供有效的解難方案。該著作是測試組繼出版《小學普通話水平考試研究》一書後取得的另一項成果。

多年來，測試組成員已研製出一系列專為大學、中學及小學而設的普通話水平考試，又在中文課程、教學與評估領域開展了多項研究，當中的一些成果可供香港的教育與考評部門參考。

Winning Projects at the 40th International Exhibition of Inventions (Geneva, Switzerland, April 2012)

第四十屆國際發明展中獲獎項目（瑞士日內瓦，二零一二年四月）

Award 獎項	Project 項目	Principal Investigator/ Inventor 首席研究員/發明者	Department/Division 學系/學部
Gold Medal 金獎 The Prize of the Chinese Delegation 中國代表團獎	Preparation of Selenium Nanoparticles with Strong Anti-Tumour Activity Using Tiger Milk Mushroom 利用虎奶菇製備抗腫瘤納米硒 (See Cover Story on P.1) (見第1頁封面故事)	Dr Wong Ka-hing 黃家興博士	Department of Applied Biology and Chemical Technology 應用生物及化學科技學系
Gold Medal 金獎 Mau Award for the best Educational Innovation from Mehr Alborz University in I.R.IRAN 伊朗大學特別大獎	3D Ultrasound Imaging for Spine Scoliosis 基於三維超聲的脊柱側彎的評估	Prof. Zheng Yongping 鄭永平教授	Inter-disciplinary Division of Biomedical Engineering 生物醫學工程跨領域學部
Gold Medal 金獎 Special Prize – Gold Medal from Association “Russian House for International Scientific and Technological Cooperation” 俄羅斯內務國際科學技術合作協會特別獎 - 金獎	Hygienic Socks with Antifungal Microcapsules for Patients with Tinea Pedis (Athlete's foot) 採用微膠囊技術研發治療足癬(香港腳)的衛生襪 (See Research Story on P.23) (見第23頁科研故事)	Prof. Marcus Yuen Chun-wah 袁進華教授 Dr Joanne Yip Yiu-wan 葉曉雲博士	Institute of Textiles and Clothing 紡織及製衣學系
Gold Medal 金獎	A Novel QPAR Technique for Extracting Valuable Information from Herbal Medicine 提取中藥內隱藏珍貴訊息的創新技術 (See Research Story on P.19) (見第19頁科研故事)	Prof. Chau Foo-tim 周福添教授 Dr Daniel Sze Man-yuen 施文遠博士	Department of Applied Biology and Chemical Technology 應用生物及化學科技學系 Department of Health Technology and Informatics 醫療科技及資訊學系
Gold Medal 金獎	Lead-free Ferroelectrics Based Microrefrigerator 基於無鉛鐵電材料的微型製冷器 (See Research Story on P.25) (見第25頁科研故事)	Dr Zheng Guang-ping 鄭廣平博士	Department of Mechanical Engineering 機械工程學系
Silver Medal 銀獎 Special Award from Romanian Association for Nonconventional Technologies, Bucharest Romania 羅馬尼亞創新科技協會特別大獎	Functional and Decorative Textile Products through Sputtering Technology 功能性與裝飾性的濺射鍍紡織產品	Dr Kinor Jiang 姜綬祥博士	Institute of Textiles and Clothing 紡織及製衣學系
Silver Medal 銀獎	A Novel inline Hydropower System for Power Generation from Water Pipelines 內聯閉式輸水管水力發電系統	Prof. Yang Hong-xing 楊洪興教授 Mr Chen Jian 陳建先生 Dr Lu Lin 呂琳博士	Department of Building and Services Engineering 屋宇設備工程學系