

04

Knowledge Transfer & Partnerships with Industry

知識轉移與夥伴拍業界

ENHANCING COMPETITIVENESS 提升競爭優勢



PolyU's close connections with the community are continually enhanced through the flow of know-how into other sectors of society via a variety of enterprising services, including consultancy and licensing. Collaborations with companies add innovation and competitiveness to industry while the University is also placing an increasing emphasis on entrepreneurship.

理大透過各種專業服務，包括顧問服務和授權業界採用本校研發的技術，把知識轉移到社會各範疇，進一步加強與各界的聯繫。理大與企業的協作亦為業界增添創意和競爭力，而本校亦進一步提倡企業家精神。

CONTRIBUTING EXPERTISE THROUGH CONSULTANCY

A major way that PolyU builds opportunity for others is through the PolyU Technology and Consultancy Company Limited (PTeC), the ISO9001-accredited commercial arm of the University. PTeC offers one-stop professional consultancy services to businesses and organizations. In 2011/12, it served 369 local and international clients, ranging from SMEs, private corporations and NGOs to government departments, and was involved in 577 consultancy projects, with a turnover of close to \$100 million.

提供顧問服務 分享專業知識

本校透過理大科技及顧問有限公司為工商界創造商機。該公司提供一站式的專業顧問服務並擁有ISO9001認證。在二零一一至一二年度，共為三百六十九家本地及海外機構，包括中小企、私營機構、非政府組織及政府部門等，提供五百七十七項顧問服務，總業務收入近一億元。

Project Highlights 項目精選

PolyU Department 理大部門	Clients 服務對象	Consultancy Project 顧問項目	Impact/Benefits 影響/優點
Department of Applied Biology and Chemical Technology 應用生物及化學科技學系	Hallyuen Holdings Limited 浩源國際投資有限公司	Development of a novel water-based nanoparticle formulation and inkjet printing system 研發新型水基納米顆粒印墨配方及噴墨印刷系統	This anti-erasable ink and printing system protects authentic print codes, such as expiry dates on packaging of fast-moving consumer products, safeguarding the interests of consumers 新型納米抗擦印墨及噴墨機可應用在快速消費品上，例如防止產品有效日期等資料被偽造，保障消費者權益
Department of Civil and Environmental Engineering 土木及環境工程學系	Highways Department, HKSAR Government 香港特別行政區政府路政署	Study on the application of glassphalt in Hong Kong 研究玻璃瀝青在香港的應用	Evaluates the suitability of using glassphalt for Hong Kong road networks 評估在香港道路網絡應用玻璃瀝青的適合度
Department of Rehabilitation Sciences 康復治療科學系	Yan Chai Hospital Social Services Department 仁濟醫院社會服務部	Study on the effects of qigong on the frail and elderly 研究長者學習氣功的影響	Improves the physical health and wellness of seniors 提升長者的身心健康
Institute of Textiles and Clothing 紡織及製衣學系	Hong Kong Productivity Council 香港生產力促進局	Development of processes for dyeing natural textiles in supercritical carbon dioxide 超臨界染色在天然紡織品中的發展	Reduces effluent from clothing manufacturers and eliminates some processes required in conventional dyeing methods, saving energy 減少成衣製造的流出物、減少傳統漂染方法所需的步驟，從而節省能源
Public Policy Research Institute 公共政策研究所	Hong Kong Federation of Restaurants and Related Trades Limited 香港餐飲聯業協會	Branding study for Hong Kong's catering industry 為香港飲食業提供品牌研究	Enhances the competitiveness of the catering industry in service quality, service experience and brand management 在服務質素、顧客體驗及品牌管理方面，提升飲食業的競爭優勢

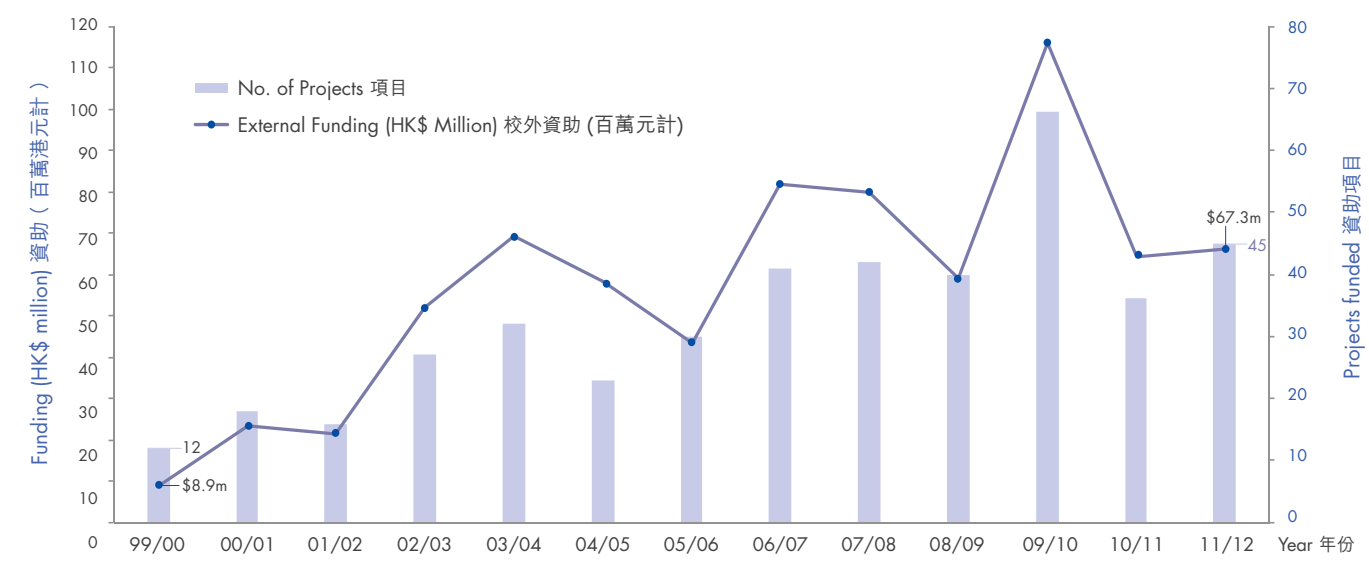
PROJECT FUNDING SUCCESS

With the assistance of the Institute for Entrepreneurship, PolyU and companies jointly apply for government funding schemes to support their endeavours. In 2011/12, a total of 36 projects received around HK\$62.5 million from the Innovation and Technology Fund, SME Development Fund, various R&D centres, and the business and industrial sector. The Teaching Company Scheme also obtained total funding of over HK\$4.7 million for nine projects from the government and companies.

申請資助 成績美滿

在企業發展院的協助下，理大及其他機構共同申請政府推出的各項資助計劃。在二零一一至一二年度，有三十六個項目獲得資助，經費約為六千二百五十萬元，資助來自創新科技基金、中小企業發展支援基金、不同的科研中心，以及工商業界。而廠校合作研究計劃也有九個項目獲得來自政府及企業超過四百七十萬元的資助。

External funding for applied R & D projects via Institute for Entrepreneurship 透過企業發展院獲校外資助的應用科研項目



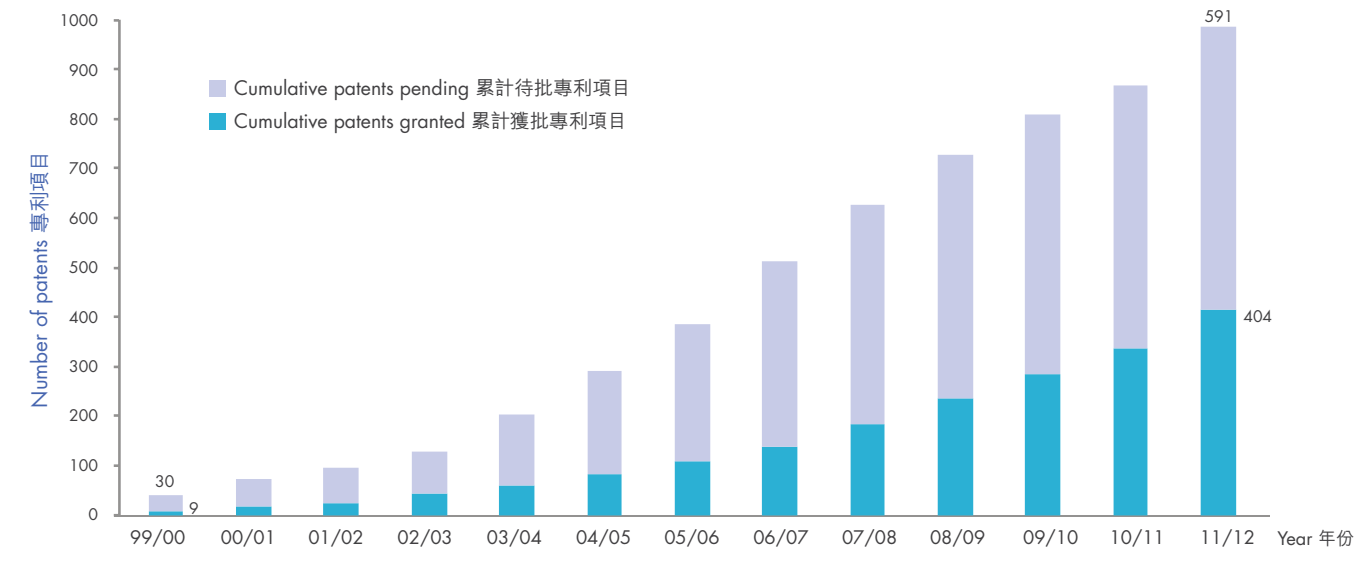
SAFEGUARDING NOVEL IDEAS

During 2011/12, the Institute for Entrepreneurship filed 69 applications for patents, trademarks and design registrations for PolyU's academics. A total of 53 patents, trademarks and designs were granted.

創新概念 加以保護

二零一一至一二年度，企業發展院為理大學者處理六十九份專利、商標及設計註冊的申請，獲批的共五十三項。

Cumulative patents granted and pending 累計獲批及待批專利項目



SPURRING DEVELOPMENT THROUGH LICENSING

Through licensing options, partner companies can leverage PolyU technologies to strengthen their performance or create new products. In 2011/12, the Institute for Entrepreneurship made over 60 licensing agreements/Memoranda of Understanding/Non-disclosure Agreements for PolyU proprietary knowledge in areas including textile technology, building construction, engineering, health science and design.

Licensed technology 技術授權

PolyU Department 理大部門	Inventor 發明者	Technology 技術	Licensee 獲授權機構	Benefits/Applications 優點/應用
Department of Applied Biology and Chemical Technology 應用生物及化學科技學系	Prof. Pauline Li Pei 李蓓教授	Amphiphilic core-shell latexes 兩親性核殼微球	Hallyuen Holdings Limited 浩源國際投資有限公司	Enables the formation of transparent nano-coating which is resistant to chemical corrosion, and produces anti-erasable ink which serves as an anti-counterfeiting measure to ensure food safety 能形成透明的納米塗層，抵禦化學腐蝕，以製造出可防擦掉的油墨，其防偽功能有助確保食品安全
Department of Building Services Engineering 屋宇設備工程學系	Prof. Li Heng 李恆教授	Proactive constructive management system 「雲建管」系統 ⁰¹	Construction Virtual Prototyping Limited (Start-up by PolyU graduate) 建築及虛擬模型有限公司 (由理大畢業生創辦)	Facilitates real-time construction management for the building industry 有助建築業進行實時施工管理
Department of Computing 電子計算學系	Prof. Jane You 尤佳教授	Non-invasive diabetic retinopathy detection and monitoring system 非侵入式糖尿病視網膜病變監測系統 ⁰²	Wealth Billion International (HK) Ltd 億康國際(香港)有限公司	Allows quick, non-intrusive diabetic retinopathy screening with privacy protection, marking a significant advance in diabetic care 非侵入式糖尿病視網膜病變檢測，既快捷亦可保護隱私，是突破性的糖尿病護理的技術
Department of Industrial and Systems Engineering 工業及系統工程學系	Prof. Winco Yung 容錦泉教授	BN-PCB technology BN-PCB 技術	M&E Technology Ltd 龍行科技有限公司	Improves thermal conductivity of printed circuit board (PCB) and heat dissipation of embedded light-emitting diodes (LEDs) 改善線路板(PCB)的導熱能力和發光二極管(LEDs)的散熱能力
Department of Rehabilitation Sciences 康復治療科學系	Prof. David Man 文偉光教授	Virtual reality (VR)-based community living skills training programme 虛擬實境(VR)——社區生活技巧訓練	C2 Innovations & Research Ltd 思穎創新科研有限公司	Enhances the living skills of patients with impairments resulting from dementia, traumatic brain injury and other conditions 改善患有腦退化症、腦外傷等病者的自我照顧能力
Department of Rehabilitation Sciences 康復治療科學系	Dr Guo Xia 郭霞博士	Ultrasonic decalcification 超聲波脫鈣 ⁰³	Pro-Cure Medical Technology Co., Ltd. 博健醫療科技有限公司	Accelerates the process of bone decalcification for pathological diagnosis or bone-grafting in orthopaedic or plastic surgeries 在病理診斷或整容手術中的骨移植過程中，加速骨骼脫鈣
Institute of Textiles and Clothing 紡織及製衣學系	Prof. Fan Jin-tu 范金土教授	Three-tier insulating system for protective clothing 三層隔熱系統以保護衣物 ⁰⁴	Epro Development Ltd	Reduces heat transmission by thermal radiation, providing superior thermal insulation without reducing moisture vapour permeability 減少輻射傳熱，提供優質的隔溫能力，並無損透濕性
Institute of Textiles and Clothing 紡織及製衣學系	Prof. Hu Jin-lian 胡金蓮教授	Shape memory material 形狀記憶紡織物料 ⁰⁵	Beijing CTA-Tex Chemical Co Ltd 北京中紡化工股份有限公司	Allows textiles to readily restore their original shape and form when subjected to certain thermo-mechanical conditions, creating an ideal material for the textile and garment industry 當紡織品遇熱的時候，能快速恢復原來的形狀，成為紡織和製衣業的理想物料
Institute of Textiles and Clothing 紡織及製衣學系	Prof. Tao Xiao-ming 陶肖明教授	Nu-Torque singles yarn technology 扭妥環錠紗生產技術 ⁰⁶	Far Eastern Industries (Wuxi) Ltd 遠紡工業(無錫)有限公司	Produces yarn with high strength and low residual torque, improving textile quality and significantly saving energy during yarn production 製造高強度和低殘餘扭矩的紗線，改良紡織品的素質。在生產紗線的過程中，顯著地節省能源
Institute of Textiles and Clothing 紡織及製衣學系	Prof. John Xin 忻浩忠教授	Nano surface fabrication technology with anti-microbial, water repellent and anti-UV properties 具有抗微生物、防水和防紫外線性能的納米表面加工技術 ⁰⁷	Nanos Technologies Co Ltd	Facilitates the production of protective and self-cleaning fabric and clothing 有助生產具保護及自我清潔功能的布料和衣物
School of Design 設計學院	Prof. Michael Siu Kin-wai 邵健偉教授	Chinese chess for the visually impaired 為視障人士設計的中國象棋 ⁰⁸	Bunhoi Industry Limited 濱海工業有限公司	Enhances communication among people with different vision capabilities and promotes the building of an inclusive society 促進不同視力人士的溝通和推廣社會共融

通過技術授權 促進業界發展

透過授權安排，夥伴機構可以利用理大的科研技術，加強企業表現或開發新產品。二零一一至一二年度，理大企業發展院成功與業界簽訂逾六十項技術授權協定/備忘錄/保密協議，其中涉及的範圍包括製衣技術、樓宇建築、工程、醫療科技及設計等。





FORGING COLLABORATIONS THAT INSPIRE IMPROVEMENT

PolyU has continued to engage in significant partnerships with companies to commercialize its innovations.

US launch for mycar

Hong Kong's first homegrown electric vehicle, jointly developed by PolyU and EuAuto Technology Ltd (EuAuto), was launched on the US market by US auto maker GreenTech Automotive. The University initiated the mycar project in 2001 and later partnered EuAuto to develop and launch the vehicle. In 2010, EuAuto was acquired by GreenTech. Attending the launch of the vehicle in the US were former US President Bill Clinton and PolyU President Prof. Timothy W. Tong (photo 01).

Participating in China's lunar programme

PolyU engaged in further work with the China Academy of Space Technology to develop a sophisticated surface sampling and packing system for collecting lunar rock samples in the third phase of China's lunar exploration programme (photo 02) (More on p.58).

Torque-free singles yarn benefits industry

The breakthrough Nu-torque singles yarn technology continued to bring benefits to the global textile industry. The technology has been licensed to seven companies from Hong Kong, the Chinese mainland, Australia, Thailand and Malaysia, with licensing discussions pending with businesses from India, Taiwan and Pakistan. The technology is capable of producing yarns with good quality, low twist and high strength, and can also save energy during spinning.

Contributing to national high-speed rail development

PolyU is set to extend its contributions to China's High-Speed Rail project with the formation of a strategic partnership with Southwest Jiaotong University Railway Development Co. Ltd. This brings together the expertise of both institutions for long-term collaboration on national rail projects (photo 03) (More on p.55-56).

推動夥伴協作 善用技術優勢

理大繼續與各機構建立合作夥伴關係，把其創新科技商品化。

mycar 推出美國市場

美國汽車製造商 GreenTech Automotive 把理大與 EuAuto Technology Ltd (EuAuto) 攜手研發的首部本港自主研发的環保電動車 mycar 推出美國市場。理大於二零零一年開始構思研發 mycar，其後與 EuAuto 合作開發及推出該電動車。GreenTech 於二零一零年收購 EuAuto。美國前總統克林頓和理大校長唐偉章教授亦參加該電動車在美國的啟動儀式(圖01)。

參與國家探月工程

理大與中國空間技術研究院加強科研合作，研發精密的登月取樣儀器，參與第三階段的國家探月工程(圖02)(詳見第58頁)。

扭妥環錠紡紗技術造福業界

具突破性的扭妥環錠單紗生產技術繼續造福世界各地紡織業。該技術已授權給七間來自香港、中國內地、澳洲、泰國和馬來西亞的機構，並正待與印度、台灣和巴基斯坦的企業商議授權事宜。此技術能生產質料上乘，低扭矩和高強度的紗線，更可在生產過程中節省能源。

參與國家高鐵發展

理大與西南交通大學鐵路發展有限公司建立了戰略合作夥伴關係，進一步參與全國高鐵項目。集合兩校專家的科研力量，就中國高速鐵路建設發展領域展開長期合作(圖03)(詳見第55-56頁)。

'Hand of Hope' speeds recovery for stroke patients

The "Hand of Hope", a breakthrough robotic technology jointly developed by PolyU and its licensee Rehab-Robotics Company Limited, enables stroke patients to move their paralyzed hands at will (More on p.60).

iHome improves life for the elderly

In a collaborative venture with the Hong Kong Housing Society, PolyU's creative design, health and safety monitoring and environmental control technologies were incorporated into a show flat for the elderly. The pilot project generated community interest. The Society is keen to collaborate on further related projects to enhance the elderly's quality of life.

Solar-powered air conditioning for public transport

With support from industry, PolyU worked with licensee Green Power Industrial Ltd to promote the award-winning Solar-Powered Air-Conditioning System for Vehicles for public transport in Hong Kong. The innovation offers a practical "green" solution to keep professional drivers and their passengers cool in minibuses, taxis, public light buses and trucks (More on p.60 & 81).

「希望之手」加快中風患者康復

「希望之手」是理大與獲授權機構復康機器人技術有限公司合作研發的機械手，能幫助中風患者按個人意志，進行手部訓練(詳見第60頁)。

「智型居」提升長者生活質素

理大與香港房屋協會攜手合作，為獨居長者設計了一個智能家居，除了創意設計外，更把理大的安全監測和智能環境控制技術融入其中。此先導計劃吸引了社會的關注，房協希望與理大在有關項目進一步合作，協助提升長者的生活質素。

太陽能冷氣系統用於公共交通工具

在業界支持下，理大聯同獲授權機構陽光動力有限公司研發，將得獎項目「太陽能汽車冷氣系統」推廣及應用於本地的公共交通工具。這項發明為職業司機和乘客提供了一個既實用又環保的方法，即使小巴、的士、公共小巴或貨車的引擎關掉時，他們仍可享受冷氣帶來的舒適(詳見第60及81頁)。

HONOURING KNOWLEDGE TRANSFER ACHIEVEMENTS

During the year under review, 11 PolyU researchers and teams were presented with Distinguished Knowledge Transfer Excellence Awards for accomplishments in transferring their technology/expertise to the business and industrial sectors. In addition, 11 Distinguished Knowledge Transfer Partnership Awards were presented to PolyU's long-term business partners.

表揚知識轉移成就

年內，為表揚理大科研人員在各自的專業知識及技術領域上對工商界所作的貢獻，十一組科研人員獲頒贈「卓越知識轉移項目獎」。此外，有十一間與理大長期合作的夥伴獲頒發「卓越知識轉移夥伴獎」。

Distinguished Knowledge Transfer Partnership Awards

Autotoll Ltd
Central Textiles (Hong Kong) Ltd
Chow Tai Fook Jewellery Co, Ltd
CLP Power Hong Kong Ltd
Guangzhou New TV Tower Development Co, Ltd
Highways Department, The Government of Hong Kong Special Administrative Region
Hong Kong Aero Engine Services Ltd
Johnson & Johnson Vision Care, Inc
SDL Atlas Ltd
Social Welfare Bureau, The Government of Macao Special Administrative Region
Transport Department, The Government of Hong Kong Special Administrative Region

卓越知識轉移夥伴獎

快易通有限公司
香港中央紡織有限公司
周大福珠寶金行有限公司
中華電力有限公司
廣州新電視塔建設有限公司
香港特別行政區政府路政署
香港航空發動機維修服務有限公司
Johnson & Johnson Vision Care, Inc
錫萊-亞太拉斯香港有限公司
澳門特別行政區政府社會工作局
香港特別行政區政府運輸署



Distinguished Knowledge Transfer Excellence Awards 卓越知識轉移項目獎

Category/Award 組別 / 獎項	Principal Consultant(s)/Department 首席顧問 / 學系	Awarding Technologies/Services 獲獎科研項目 / 顧問服務
Business Excellence Grand Award 卓越商業項目獎 大獎	Dr Sherriff Luk Ting-kwong Department of Management and Marketing 陸定光博士 管理及市場學系	Brand management, audit and loyalty study for Chow Tai Fook Jewellery 為周大福建立品牌管理、品牌審計及客戶忠誠度調查
Community Excellence Grand Award 卓越社會項目獎 大獎	Dr Raymond Tong Kai-yu Interdisciplinary Division of Biomedical Engineering 湯啟宇博士 生物醫學工程跨領域學部	Interactive intention-driven upper limb training robotic system 肌動機械手
Community Excellence Merit Award 卓越社會項目獎 優異獎	Dr Chan Kam-tong Department of Applied Social Sciences 陳錦棠博士 應用社會科學系	Evaluation studies for the Partnership Fund for the Disadvantaged 攜手扶弱基金評估研究
	Dr Zhu Xinhua Department of Chinese and Bilingual Studies 祝新華博士 中文及雙語學系	Collaboration with the Education Bureau and schools in enhancing teachers' professional development in assessing students' learning of the Chinese language 與教育局及學校合作，促進教師在中國語文 學習評估的專業發展
	Prof. Onyx Wai Wing-hong Department of Civil and Environmental Engineering 韋永康教授 土木及環境工程學系	Study of green roofs: green roof guidelines, water quality and peak runoffs 植物天台研究：植物天台指引、水質及暴雨 高峰期流量
Research Excellence Grand Award 卓越科研項目獎 大獎	Prof. Pauline Cho School of Optometry 曹蕙華教授 眼科視光學院	Clinical research on myopia control and contact lenses 近視及隱形眼鏡使用的臨床研究
Research Excellence Merit Award 卓越科研項目獎 優異獎	Prof. Pauline Li Pei Department of Applied Biology and Chemical Technology 李蓓教授 應用生物及化學科技學系	Core-shell particle technology 新型核殼納米球技術
Technological/Industrial Excellence Grand Award 卓越科技/工業項目獎 大獎	Prof. Ni Yiqing Department of Civil and Environmental Engineering 倪一清教授 土木及環境工程學系	Mega-structure diagnostic and prognostic system 大型結構診斷與預測系統
Technological/Industrial Excellence Merit Award 卓越科技/工業項目獎 優異獎	Prof. Li Heng Department of Building and Real Estate 李恆教授 建築及房地產學系	Construction virtual prototyping technology 建築虛擬模型技術
	Prof. Wang Shengwei Dr Xiao Fu Department of Building Services Engineering 王盛衛教授 肖賦博士 屋宇設備工程學系	Intelligent building life-cycle diagnosis and optimization technology 建築全生命週期智能化診斷及優化節能技術
	Prof. Ho Siu-lau Prof. Tam Hwa-yaw Department of Electrical Engineering 何兆鏗教授 譚華耀教授 電機工程學系	Railway condition monitoring system 鐵路監測系統

BOOSTING ENTREPRENEURSHIP

To foster the "Do Well, Do Good" entrepreneurial spirit in the PolyU community, a series of workshops, seminars, visits and events on entrepreneurship were organized in 2011/12, attracting more than 3,000 participants.

PolyU Micro Fund Scheme

After the successful pilot in 2011, the Micro Fund Scheme (photo 01) was launched again in 2012, receiving over 200 applications from more than 400 students and alumni. After rigorous assessment by independent panels, seed funding was granted to 16 entrepreneurial ventures under the Entrepreneurship Stream. In addition, 11 student projects received awards for proposals on achieving social sustainability under the Innovative Stream. Five of the Micro Fund's 2011 awardees have further secured incubation and funding support of close to HK\$2 million from other schemes.

Beyond Entrepreneurship Forum

To cultivate PolyU's entrepreneurial culture, the Beyond Entrepreneurship Forum: How to Develop an Innovation-driven Venture was organized in October 2011 (photo 02). More than 280 aspiring young entrepreneurs and founders of start-up companies were drawn to the event. Those attending included a group of over 40 Silicon Valley investors and entrepreneurs, collectively known as "Geeks on a Plane" (GOAP). Mr Nicholas W. Yang, PolyU Executive Vice President, opened the event (photo 03), with keynote speeches by Mr Jonathan Siegel, representing GOAP, and PolyU alumnus Dr Johnny Ng, Chairman of Goldford Venture.

Strengthening links through ISTA platform

The International Strategic Technology Alliance (ISTA), initiated by PolyU, held its 16th Annual General Meeting at Zhejiang University in October 2011 (photo 04). Two knowledge transfer forums were organized, with interactive sharing by experts from the Chinese mainland, Taiwan and Europe. ISTA is a significant collaboration and partnership platform for 24 renowned universities in the Chinese mainland, the United States and the United Kingdom.

Opening up executive training opportunities

PolyU's educational reach includes training and development programmes for professionals and executives, and customized courses for industry associations and enterprises. In 2011/12, the Institute for Entrepreneurship successfully delivered 398 courses, served 80 corporate clients and benefitted more than 14,800 participants from the public and private sectors.

提倡企業家精神

為了培育理大社群發展「有利且有善」的企業家精神，本校於二零一一至一二年度，舉辦了一系列的工作坊、講座、訪問團和有關創業的活動，吸引逾三千名人士參加。

理大微型基金計劃

在二零一一年成功試行後，理大微型基金計劃(圖01)在二零一二年再次推行，共收到超過四百名同學及校友提交逾二百份申請書。透過獨立評審委員的嚴格甄選，在創業組中，十六個商業項目獲頒發種子基金，支持他們把計劃付諸實踐；而在創新組中，十一個由同學構思的項目獲頒獎項，表揚他們就社會可持續發展提出的建議。而二零一一年的五個獲獎創業項目，亦進一步從其他創業培訓計劃獲得近二百萬港元的資助。

「跨越平凡創新天」創業論壇

為孕育創業文化，理大於二零一一年十月舉行「跨越平凡創新天」論壇，主題為「如何開展以創新創意為本的企業」(圖02)。超過二百八十名有意創業的青年才俊及事業剛起步的企業家出席活動，當中包括四十位來自美國矽谷Geeks on a Plane (GOAP) 考察團的投資者及企業家。論壇由理大行政副校長楊偉雄先生主持開幕(圖03)，並由GOAP代表Jonathan Siegel及理大校友、高鋒創投主席吳傑莊博士發表主題演講。

協作網加強聯繫

由理大牽頭成立的「國際應用科技開發協作網」在二零一一年十月於浙江大學舉行了第十六次全體會員大會(圖04)。此外，協作網舉辦了兩個知識轉移論壇，邀得中國內地、台灣和歐洲的專家分享經驗。協作網是促進院校產學研合作的重要平台，成員包括二十四所中國內地、美國及英國的著名大學。

行政培訓

理大為專業人士及行政人員提供培訓課程，以及為工商協會和企業舉辦度身訂造的課程。二零一一至一二年度，企業發展院提供了三百九十八項課程，為八十家機構提供服務，惠及逾一萬四千八百名公營及私營機構人士。

