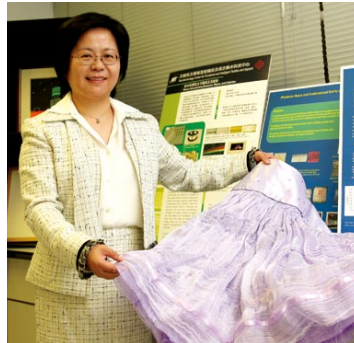




PolyU researchers excel in Brussels Eureka Fair

At Brussels Eureka 2007, also known as the 56th World Exhibition of Innovation, Research and New Technology, held earlier in Belgium, PolyU researchers won a record number of awards—four Gold, one Silver and one Bronze Medals as well as three Special Prizes. In addition, Prof. Tao Xiao-ming of the Institute of Textiles and Clothing, and Prof. Joanne Chung of the School of Nursing have received the Brussels Mayor's Invention Awards in recognition of their distinguished accomplishments. Among some 600 inventions from more than 30 countries and territories at the exhibition, PolyU's winning entries are as follows:



Special Prize and Bronze Medal:

Nano-structured Photonic Fibres and Fabrics

Principal Investigator: Prof. Tao Xiao-ming, Institute of Textiles and Clothing

In studying the use of nanotechnology for the textile and garment industry, Prof. Tao and her team have successfully developed polymer-based photonic fibres which are capable of controlling colour, luminescence intensity, scattering intensity and self amplification. With these fibres, a variety of luminescent fabric displays can be designed and fabricated.

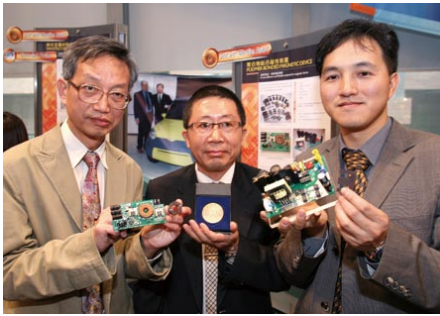


Gold Medal with Mention & Special Prize:

Nano-structured Materials Generation System—Surface Mechanical Attrition Treatment (SMAT)

Principal Investigator: Prof. Lu Jian, Department of Mechanical Engineering

This sophisticated SMAT process is jointly invented by Prof. Lu and Prof. Lu Ke of the Chinese Academy of Sciences. In the treatment process, a nano-crystalline layer is created on the surface of metal. Combined with traditional work surface treatment methods, the mechanical properties of materials can be significantly improved. This advanced technique is applicable to such industries as automobile, aerospace, civil structures, machinery, power generation and bio-medical industry.



Gold Medal with Mention: Polymer-bonded Magnetic Devices

Principal Investigators: Prof. Eric Cheng, Department of Electrical Engineering; Dr Wong Yuen-wah, Department of Applied Physics

The team has made use of state-of-the-art polymer-bonded magnetic device to produce magnetic materials. In using this new method, non-brittle magnetic cores of flexible shapes and different sizes can be made. This breakthrough can be applied in a wide range of products, including transformers and inductor components, direct-current-to-direct-current power converters, high frequency power supplies, and screening of electromagnetic wave.

Gold Medal and Special Prize:

PolyJbot Rehabilitation Robotic System

Principal Investigator: Dr Raymond Tong Kai-yu, Department of Health Technology and Informatics

The robotic system can generate training regimes with different combinations of assistive and resistive forces by capturing users' intention through monitoring muscle activities as measured by EMG electrode placed on the body surface. It can be used in hospitals, clinics, elderly homes and in homes to help provide therapeutic training exercises to the needy including stroke patients and the elderly. This project is the fruit of an inter-departmental research team led by Dr Tong and Prof. Wallace Leung, Director of PolyU's Research Institute of Innovative Products and Technologies, drawing upon expertise from the School of Design, Industrial Centre, and the Departments of Electrical Engineering, Computing and Rehabilitation Sciences.



Gold Medal:

PicPacker™ Intelligent Warehouse Optimizing System

Principal Investigator: Dr Henry Lau, Department of Industrial and Systems Engineering

Currently most third-party logistics providers, which specialize in integrated warehousing and transportation services, rely on human expertise in ascertaining the size of carton boxes for packing shipment items out of the warehouse, and these boxes are often oversized. The invention addresses the problem, particularly when large amount of items and carton boxes are involved, through an Artificial Intelligence-based genetic algorithm with fuzzy controlled mechanism, thereby minimizing the space usage and optimizing the warehouse capacity.

Silver Medal :

A Novel Integrative Acupressure Pen for Pain Relief

Principal Investigator: Prof. Joanne Chung, School of Nursing

This special pen is basically a user-programmable device which offers relief for neck and lower back pain. The therapeutic mechanism works by integrating mechanical engineering principles and traditional Chinese medicine theory, which states that the stimulation of an acupoint by manually exerted force could help to alleviate specific kinds of pain and hence improve the sufferers' quality of life. It has a memory feature that enables users to customise the use of a complex modality of acupressure for their own needs. ❖



Breakthroughs in research

New TeleCare Technologies

The elderly, especially those suffering from senile dementia, and other vulnerable persons will be able to benefit from a wearable TeleCare system developed through the joint efforts of PolyU researchers from the Jockey Club Rehabilitation Engineering Centre, Department of Health Technology and Informatics (HTI) and other departments.

Funded by the Hong Kong Jockey Club Charities Trust, the system was unveiled by Mr William Y. Yiu, Executive Director of Charities of HKJC; Dr Lui Sun-wing, PolyU



(From fourth from right) Mr Yiu, Dr Lui and Prof. Mak

Vice President; and Prof. Arthur Mak, Associate Vice President and Head of Department of HTI, at a press briefing.

The system can work in both indoor and outdoor settings. With a set of ear-borne and wrist-borne vital sign wireless sensors, the system can monitor wearers' key health indicators such as heart rate, body temperature and slight body motions around the clock. It can also

locate wearers' whereabouts promptly through a positioning system using advanced telecommunication technologies.

With the support of the Senior Citizen Home Safety Association, the system proves to be effective in enhancing special caring services for the elderly. The University has filed a patent for the innovation, which had won a Silver Medal in Brussels Eureka 2005. ❖



Shape Memory Technology

A team of top-notch researchers at the Institute of Textiles and Clothing has recently achieved further breakthrough in shape memory textile technology by making shape memory fibres and products from these kinds of fibres. Heading the team is Prof. Hu Jinlian, Principal Investigator of the shape memory project and founder of the University's Shape Memory Textile Centre.

It is a further development of the world's first cellulose-made shape memory fabric. By mastering the spinning of fibres

and yarns from synthesizing shape memory polymers as well as fabrics made by using shape memory fibres, new functions are created and the process is now speeded up. Backed by industry support, this manufacturing procedure and the chemical production have been proved to work in the production line. ❖

