



創新科技署
Innovation and
Technology Commission

ITC
e-newsletter

June 2019



ITC Highlight

Hong Kong delegation wins 126 awards at the 47th International Exhibition of Inventions of Geneva

The annual International Exhibition of Inventions of Geneva has long been perceived as one of the most significant events for innovative ideas. This year, the Hong Kong delegation comprising many research institutions, universities, companies in Hong Kong Science Park and I&T enterprises stood out in the 47th International Exhibition of Inventions of Geneva. Together, they showcased 117 projects and received 126 prizes in total. With the continuous support and commitment to innovative technology promotion by the HKSAR government, it is rewarding to report that Hong Kong was once again awarded the Grand Prix of the International Exhibition of Inventions of Geneva. Followed by 8 special prizes, 18 gold medals with the congratulations of the jury, 39 gold medals, 51 silver medals and 9 bronze medals, the Hong Kong delegation distinguished themselves among the international exhibitors from 40 countries.

Equally exciting is the accolades won by government departments. These include the "Robot System for Placement and Collection of Traffic Cones and Lanterns in Road Works" (RoadBot 1) co-invented by the Highways Department and the Hong Kong Productivity Council which won the Prize of the Chinese Delegation for Invention and Innovation, and gold medal with the congratulations of the Jury. The Liricco Technologies Limited coupled with Correctional Services Department and the Electrical and Mechanical Services Department, also introduced their newly developed "Health Signs Monitoring System" which was awarded a gold medal. In addition, the local research & development (R&D) centres under the Innovation and Technology Commission (ITC) achieved commendable results which include Hong Kong Applied Science and Technology Research Institute (ASTRI) winning 21 awards, Nano and Advanced Materials Institute (NAMI) winning 11 awards, The Hong Kong Research Institute of Textiles and Apparel (HKRITA) winning 6 awards, and Logistics and Supply Chain MultiTech R&D Centre (LSCM) winning 5 awards.



Over 800 exhibitors from 40 countries and regions showcased their inventions at 47th International Exhibition of Inventions of Geneva. (Photo Credit: inventions-geneva.ch)



RoadBot 1 co-invented by the Highways Department and the Hong Kong Productivity Council won the Prize of the Chinese Delegation for Invention and Innovation.



A number of I&T enterprises participated in the exhibition. (Photo Credit: inventions-geneva.ch)

The following 7 projects are the winners of the Grand Prix and special prizes:

1. **WATMAR³ - GRST Disruptive Core Technology** – GRST Holdings Limited
 - Grand Prix of the International Exhibition of Inventions of Geneva
 - Swiss Automobile Club Prize – ACS
2. **WiseEye: AI-based Textile Material Inspection System** – The Hong Kong Polytechnic University
 - Prize of the Italian Delegation of the Exhibition
 - Prize of the Technical University of Cluj-Napoca of Romania
3. **Palm-sized 3D Ultrasound Imaging System for Radiation-free Scoliosis Assessment** – The Hong Kong Polytechnic University
 - Prize of the Legal Company “Gorodisky & Partners” – Russia
4. **Mobile Exo-neuro-musculo-skeleton** – The Hong Kong Polytechnic University
 - Prize of the Polish of Patents Office
5. **Robot System for Placement and Collection of Traffic Cones and Lanterns in Road Works (RoadBot 1)** – Highways Department & Hong Kong Productivity Council
 - Prize of the Chinese Delegation for Invention and Innovation
6. **City Air Purification System II (CAPS II)** – Sino Group - Sino Innovation Laboratory Limited
 - Industrial Design Prize
7. **Zero Waste Compact Water Dispenser - Nanofibrous Water Filter providing RO Performance with Excellent Flow Rate** – Nano and Advanced Materials Institute Limited
 - Prize of the Ministry for Scientific Research and Innovation of Romania

Local technology company wins Grand Prix for its green battery supply chain

A Hong Kong-based technology company, GRST Holdings Limited, has been awarded the Grand Prix of the 47th International Exhibition of Inventions of Geneva with the unprecedented invention of a closed-loop lithium battery supply chain. The project team has developed the WATMAR³ - GRST Disruptive Core Technology to remanufacture and recycle lithium-ion batteries sustainably.

Conventional battery recycling, requires chemical digestion or high temperature burning. WATMAR³ features separation solely by water, significantly diminishing the energy consumption and carbon dioxide emission. Coupled with the increased recovery rate of 80-99%, profit is expected with the elevated recovery value.

On the other hand, WATMAR³ discharges old batteries in a water bath. Valuable lithium salts can be extracted by distillation after being disassembled, while the battery cells are dissolved in water. The recovered materials are then mixed into a slurry paste, followed by coating, drying and reprocessing into brand new batteries. Comparably, the new GRST cell manufacturing process reduces the production cost greatly and energy consumption by half. The batteries are highly effective and certified to be safe. This patented technology has huge potentials be exploited in the commercial application.



Mr Wong Sing-hung Eric, Chairman of GRST Holdings Limited (second left), and his team were awarded the Grand Prix of the 47th International Exhibition of Inventions of Geneva. (Photo Credit: inventions-geneva.ch)

Innovation and Technology Scholarship 2019 Award Presentation Ceremony

25 outstanding local university students from different streams of study, including science, engineering, computer and health-related disciplines, were awarded scholarships for their passion and dedication in the pursuit of knowledge of innovation and technology (I&T). Each student is awarded a scholarship capped at HKD150,000 for their participation in a series of programmes which will broaden their horizons and provide them with the opportunities to apply what they have learned to the community. Programmes include an attachment in the world's top overseas or Mainland institutes, mentorship programmes, local internships and so on.

Mrs Carrie Lam, Chief Executive, officiated the ceremony and delivered the remarks, "My Government is committed to nurturing Hong Kong's rise as an international I&T hub. And we can't do that without our world-class universities and our world-class students. The Government's role is to help enable their success through our policies, initiatives and resources."

Jointly established by ITC, The Hongkong and Shanghai Banking Corporation Limited and The Hong Kong Federation of Youth Groups, the Innovation and Technology Scholarship aims to nurture I&T talents and encourage more local university graduates to enter the field of I&T. Since its inception in 2011, the Scholarship has been awarded to over 200 local students.



The Innovation and Technology Scholarship 2019 Award Presentation Ceremony was held on April 1.



25 outstanding university students were awarded scholarships.

Hong Kong Student Science Project Competition 2019 concludes successfully

The Hong Kong Student Science Project Competition (HKSSPC) 2019 Final Judging cum Award Presentation Ceremony was held on April 27. HKSSPC recognises the application of innovative science through science-related projects and nurtures young talent who have demonstrated high potential in science and technology.

This year, HKSSPC attracted about 1,000 students from over 80 schools in 300 participating teams. Most of the creative projects are closely related to our daily life. For examples, the champion "Investigation Project" of Junior Division - "Feasibility of Using Microbes to Grow 'Textile Material'" from The Chinese Foundation Secondary School - studied about the novel textile material grown by mixing microbes with sweeten tea; whilst the champion-winning "Investigation Project" of Senior Division - "Investigation on Air Quality: Gas CO₂ Concentration" from Heep Yunn School - investigated the factors that affect the air quality in their classrooms and introduced an invention that can monitor the carbon dioxide level.



HKSSPC 2019 attracted 1,000 students from 80 schools in 300 participating teams.

Champions Teams:



Invention Project, Junior Division:
"Easy Go" from QualiEd College



Investigation Project, Junior Division:
"Feasibility of Using Microbes to Grow
'Textile Material'" from The Chinese
Foundation Secondary School



Invention Project, Senior Division:
"E-Care" from Po Leung Kuk Celine Ho
Yam Tong College



Investigation Project, Senior Division:
"Investigation on Air Quality: Gas CO2
Concentration" from Heep Yunn School



Kick-off of the 2nd "Distinguished Master, Accomplished Students Mentorship Programme"



Mrs Carrie Lam, Chief Executive (centre) and Mr Nicholas Yang, the Secretary for Innovation and Technology (third left) officiated at the opening ceremony with honourable guests.

Jointly organised by the Academy of Sciences of Hong Kong, Our Hong Kong Foundation, the Hong Kong Academy of Engineering Sciences and the Hong Kong Institution of Science, the second edition of "Distinguished Master, Accomplished Students Mentorship Programme" was kicked off on March 31, 2019. 51 distinguished professors, scientists and engineers will act as pro bono mentors for a year, to provide a total of 136 local secondary school students with advice and other support for their life planning to help them grow along their science journey.

"Tell me and I forget. Teach me and I may remember. Involve me and I learn." Citing a famous quote from Benjamin Franklin in her speech, Mrs Carrie Lam, the Chief Executive, expressed her hope that students could gain knowledge through proactive participation in the learning process. She also encouraged mentees to seize opportunity to communicate with each other and develop the persevering attitude of scientists.



Hong Kong Laureate Forum

On 14 May 2019, the launching ceremony of the Hong Kong Laureate Forum was held at Government House. Over 150 guests including four Shaw laureates attended the ceremony to pledge their support for the initiative. Mrs Carrie Lam, Chief Executive, witnessed the signing of two pacts, including a sponsorship agreement between the Council of the Hong Kong Laureate Forum and its principal sponsor Lee Shau Kee Foundation, and a memorandum of understanding between the council and the Shaw Prize Foundation. Mrs Lam pointed out that the forum could build an interest and enthusiasm for science among the younger generation by creating opportunities for direct exchange and inspiring dialogue with some of the brightest minds in science.



Mrs Carrie Lam, Chief Executive, witnessed the signing of two pacts.

The Hong Kong Laureate Forum aspires to be a world-class academic exchange event to connect the current and next generations of scientific leaders. Mrs Lam revealed in her article on the Birth of the Hong Kong Laureate Forum that the idea of creating the forum was inspired when she attended the Shaw Prize Award Presentation Ceremony for the first time as Chief Executive of Hong Kong in 2017. On that occasion, five distinguished scientists who had achieved significant breakthroughs in academic and scientific research were honoured for their work which has resulted in a positive and profound impact on mankind. Mrs Lam added that, it was at the time she was devising the strategy for Hong Kong's innovation and technology development and promotion of popular science education, she decided to create the Hong Kong Laureate Forum in the hope of pooling together the great scientific minds to help nurture our next generation of young scientists. With full sponsorship from the Lee Shau Kee Foundation and the support of the Shaw Prize Foundation, the Council of the Hong Kong Laureate Forum was founded in April 2019. The inaugural forum will be held in November 2021 in Hong Kong and applications to attend the event are expected to start next year.



Members of the Board of the Council of the Hong Kong Laureate Forum met at Government House in February 2019.



In 2018, Mrs Carrie Lam met with Prof Dr Jürgen Kluge, Chairman of the Foundation for the Lindau Nobel Laureate Meetings, in Lindau, Germany to learn about the organisation of the annual Lindau Meetings.

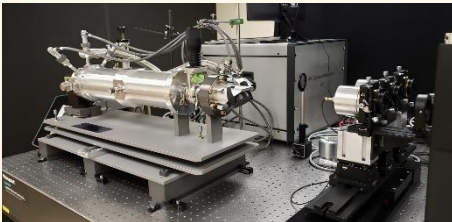
Establishing the primary standard for realising the SI base unit of luminous Intensity

The Standards and Calibration Laboratory (SCL) has recently established the primary standard for the candela, the SI base unit of luminous intensity. Luminous intensity is defined as the energy radiated by a light source per unit time and per unit solid angle. In photometry, light is measured based on the response of the human eyes at different wavelengths.

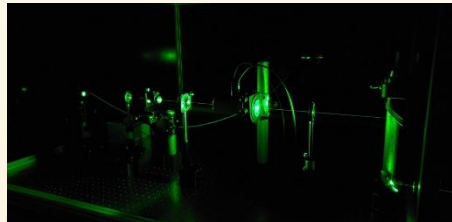
The practical realisation of the candela is not easy. At SCL and many overseas national metrology institutes, a cryogenic radiometer is used as an absolute light meter to measure the power of incident light by direct reference to electrical power. This is known as the electrical substitution method. In order to improve the system sensitivity and minimise noises, the radiometer must be operated at an extremely low temperature of about 15 K (around -258°C), hence the name cryogenic radiometer.

The cryogenic radiometer is used to calibrate silicon trap radiometers for accurate measurement of optical power. By adding an optical filter with human eye response and a precision aperture, the silicon trap radiometer becomes a reference photometer. The candela can then be realised by measuring a light source with this reference photometer at a well-defined solid angle.

The cryogenic radiometer will serve as the primary standard for all photometric and radiometry measurements at SCL. It establishes the traceability of the photometric quantities for local users of optical instruments.



The SCL cryogenic radiometer and the trap radiometers.



High power laser is used as the monochromatic light source.



Setup for luminous intensity measurement of a light source by a reference photometer.



Upcoming Events

Event details will be announced on the corresponding websites in due course.

Date	Events
Aug 20-26	The 52nd Joint School Science Exhibition (JSSE)
Oct 26 – Nov 3	InnoCarnival 2019

ENQUIRIES & COMMENTS

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