News
from the Department of Physics and Materials Science (AP)
of City University of Hong Kong

Foreword

The Newsletter will be most up to date in its on-line version (found at http://www.ap.cityu.edu.hk/pdf/newsletter.pdf).

Achievements

Our Department, Faculty and University have performed very well in various regional and world-wide rankings:

CityU’s Physical Sciences first in Hong Kong in the 2006 RAE (posted 2007/03/07)

In March 2007, the results of the Hong Kong Research Assessment Exercise covering the period 1999-2005 were published. It ranked CityU first among universities in Hong Kong in the Physical Sciences (which comprises physics and astronomy, chemistry, materials science, earth sciences, and mathematics and statistics): CityU obtained 98.96% vs 93.75% for BU, 95.16% for CUHK, 94.62% for HKU, 92.61% for HKUST and 87.25% for PolyU.

CityU 154th in THES world rankings, up 40 places in two years (posted 2006/10)

According to the authoritative Times Higher Education Supplement published in October 2006, CityU rose in its global university rankings from 198th in 2004 to 178th in 2005 and 154th in 2006. CityU was placed 8th in Greater China and 4th in Hong Kong in this period.

AP First in Hong Kong in Wuhan rankings (posted 2007/03/15)

In 2006, the Research Centre for China Science Evaluation of Wuhan University ranked CityU as 1st in Hong Kong in the category of Materials Science (5th in Greater China and 58th in the world), while HKUST was ranked 2nd in Hong Kong (14th in Greater China and 202nd in the world).
CityU was ranked 1st in Hong Kong in the category of Physics (8th in Greater China and 380th in the world), while CUHK was 2nd (12th in Greater China and 486th in the world) and HKU 3rd (13th in Greater China and 494th in the world). For more details, see: https://webmail.cityu.edu.hk/redirect?http://www1.bbsland.com/education/messages/269246.html

AP's Materials Sciences 1st in Hong Kong according to ISI (posted 2008/01)

According to the ISI Essential Science Indicators of 2008, AP's Materials Sciences is 1st in Hong Kong, 4th in Greater China, and 48th in the world.

Awards

AP staff and students reaped a series of awards in recent years, including (as of 2008/08/18):


- Prof Joseph Ki Leuk LAI: Fellow of the Institution of Mechanical Engineers (2004)


- Dr Robert Kwok Yiu LI: 廣東省科學技術獎勵(三等) (2005)

- Dr Duo Duo MA: State Natural Science Award (Second-Class
• Prof Sie Chin TJONG: 廣東省科學技術獎勵(三等) (2005)

• Prof Michel A VAN HOVE: Ernst Mach Honorary Medal for Merit (2008)

• Prof Lawrence Chi Man WU: Teaching Excellence Award (2004)

• Dr Rui Qin ZHANG: Friedrich Wilhem Bessel Research Award (2004)
  State Natural Science Award (Second-Class Award) (2005)

• Dr Wen ZHOU: Humboldt Research Fellowship (2007)

For more details, please refer to
Staff: http://www.ap.cityu.edu.hk/index.aspx?id=20061221141654&lang=e, and

Major funding

AP scientists attracted several large funding grants, including (as of 2008/08/18):

• Prof Igor BELLO: $2,700,000 from RGC Central Allocation (2004-2006)
  on facility for single nano-object characterization (Raman/NSOM/AFM)

  $3,450,000 from RGC Central Allocation (2005-2007)
  on ion nanostructuring of functional materials

• Prof Paul Kim Ho CHU: $4,400,000 from RGC Central Allocation (1995-2007)
  on the establishment of a plasma immersion ion implantation (PIII) facility for surface treatment of advanced materials

  $4,540,000 from RGC Central Allocation (2005-2008)
  on development of novel materials for orthopedics

  $3,230,000 from RGC Central Allocation (2007-2010)
  on plasma immersion ion implantation and deposition (PIII&D) equipment
• Prof Shuit Tong LEE: $16,552,908 from Industrial Support Fund Project (1998-2001) on establishment of organic electroluminescent display technology in Hong Kong

$5,600,000 from RGC Central Allocation (1999-2006) on organic electroluminescence

$5,810,000 from Innovation and Technology Fund (2001-2003) on organic electroluminescent flat-panels for Hong Kong

$5,050,000 from RGC Central Allocation (2002-2008) on science and technology of silicon nanowires

$8,484,495 from Innovation and Technology Fund (2006-2007) on advanced materials, devices and processing technologies for organic light-emitting devices (OLED)

• Prof David Shuk Yin TONG: $4,000,000 from RGC Central Allocation (2003-2006) on multiple-scattering of photons and electrons from nanostructures and other large-scale non-periodic systems

• Dr Chan Hung SHEK $3,295,087 from Innovation & Technology Fund (2007-2009) on powder metal forming technology for high temperature light weight aluminum-titanium alloys

AP Education Fund and AP Education Fund Scholarships

In 2003, the Department established an AP Education Fund to support scholarships, teaching and computing facilities, academic exchange, student activities, teaching consumables, and other educational functions. Donations to the fund were made by Dr Ho Fai CHEUNG, Prof Brian J HOSKINS, Prof Michael J KELLY, Prof Shuit Tong LEE, Prof Czeslaw Z RUDOWICZ, Prof King Ning TU, Prof Michel A VAN HOVE, Dr Zheng Kui XU and Dr Rui Qin ZHANG.

The Department subsequently set up the AP Education Fund Scholarships to reward full-time AP undergraduate students who have shown outstanding performance. After stringent
assessment, scholarships were granted in 2007 to Ting Fai CHAN, Ka Ho LEE, Siu Ling LEUNG, Yun Qi WANG, Chi Wai WONG and Che Yan YEUNG.

Donations Received

The Department works closely with industry to establish fruitful industrial links. The following donations received in 2005 – 2008 earmarked the department’s emphasis on its ‘applied’ mission.

- $4 million donation pledge from Guy Carpenter & Company, with matching grants from UGC and the University, support to research activities in monsoons over China, tropical cyclones in the western North Pacific and the possible effects on climate caused by global warming.

- $56,280 from Chiang Mai University, Thailand to support research activities in the area of plasma surface modification of functional materials.

- $35,000 from Mr William FU, Hong Kong Photographic and Optics Manufacturers Association; $16,380 from Mr Joseph KO, Sunpet Industries Ltd, and $5,000 from Mr Victor TSUI, Asia Optical Industries Ltd, in support of teaching and research in the Laboratory for Applied Optics.

- $45,000 from Mr K C CHAN, K & W Asia Technology Co. Ltd, and $40,000 from Mr Samanta PONG, Shiu Wing Steel Ltd, to support research of functional metals.

- $300,000 from Plasma Technology Ltd to support research activities in the area of plasma surface modification of functional materials.

- $7,000 from Miss Ming Wai CHEUK, Resinmate Technology Ltd, to support the preparation of nano core-shell rubber particles by the micelle approach for the toughening of polymers.

Statistics

Our Department counted (as of 2011/09/01, including its affiliated research centers):

- 26 Academic Staff: 5 Chair Professors, 8 Professors, 7 Associate Professors, 6 Assistant Professors
- 1 Instructor
- 1 Emeritus Professor, 3 Honorary Professors and 2 Adjunct Professors
• 98 Research Staff: 5 Senior Research Fellows, 11 Research Fellows, 1 Honorary Research Fellows, 2 Postdoctoral Fellow, 21 Senior Research Associates, 7 Research Associates, 13 Senior Research Assistants, 38 Research Assistants
• 70 Postgraduate Students: 68 PhD and 2 MPhil students
• 294 Undergraduate Students
• 19 Technical Staffs
• 9 Administrative Staffs


The Department hosts many visitors each year, who gave a total of 24 seminars in 2008 (January – August), 28 seminars in 2007, 34 in 2006 and 16 in 2005.

People

Professor S S Lau has been our External Academic Advisor of the MSc in Materials Engineering and Nanotechnology programme since 2004. Some of our MSc students have met him during his visit in 2006, and found him enlightening, friendly and helpful. Being a native Hong Kong person, Professor Lau takes a keen interest in the education of Hong Kong scientists and engineers. He has been with the Department of Electrical and Computer Engineering at UC San Diego since 1980. He is a pioneer in the silicidation process for silicon technology and in the ion-mixing phenomenon. His research interests are in the fields of processing, characterization and applications of electronic materials, ion-solid interactions and thin film technology. He visited the Department in 2008 again. With his excellent academic background and extensive experience, he has been providing valuable advice on various aspects of the MSc programme.

Prof Nathan Woon Tong CHEUNG has been the External Academic Advisor of the BEng in Materials Engineering since 2006. Prof Cheung, who was born and raised in the New
Territories, Hong Kong, is Professor in the Department of Electrical Engineering at the University of California, Berkeley. Prof Cheung is an expert in the areas of electrical, mechanical, optical, chemical, and materials engineering. His research interests include integrated circuit processing, electronic materials, VLSI reliability, high-bandgap semiconductors, and plasma ion beam processing. In his spare time, Prof Cheung plays badminton with us; he is an excellent player at the net.

A major hiring exercise started in 2006 to reverse the 5-year decline in academic staff numbers and will continue for the foreseeable future. The emphasis is on strengthening current programmes and developing new directions, such as energy and environment, as well as nanobioscience, partly in collaboration with other departments and universities. The Department successfully recruited six new academic staff last year.

- Dr Yang Yang LI as Assistant Professor (2007/05)
- Dr Mark Wenig as Assistant Professor (2007/08)
• Dr Kelvin Yeung as Assistant Professor (2007/09)

• Dr Antonio Zapien as Assistant Professor (2007/10)

• Dr Wen ZHOU as Assistant Professor (2008/02)

• Dr Francis Tam as Lecturer (2008/09)
Teaching

Starting in 2006, AP has aggressively introduced CityU’s new Outcome Based Teaching and Learning (OBTL) methodology. It stresses “I can do” over “I know” and is better adapted to the job market facing our students today. The new OBTL approach was implemented in all Years 1 and 2 courses, and will be introduced in all Year 3 courses in the coming year.

Many of our Department’s students have benefited from our Faculty’s 9-to-13-week Industrial Attachment Scheme (IAS) and Internship Programme for Exchange Students (IPES) as well as the 8-month Co-operative Education Scheme (Co-op). Between 2005 and 2008, 84 students participated in IAS, 18 students in IPES and 30 students in Co-op.

AP has for many years benefited from accreditation by the Hong Kong Institution of Engineers (HKIE) for students enrolled in our Bachelor of Engineering programme in Materials Engineering. HKIE has renewed our accreditation until 2009.

In 2006, AP has introduced the use of a new generation of PDAs in class, with extensive infrastructural and organizational assistance from the Faculty of Business and generous financial support from the Vice-President of Undergraduate Education. Each student borrows a PDA for one semester or year from the Department (paying only a small insurance fee against loss or damage). The PDA can be used in a variety of ways, such as during class to check the student’s immediate understanding of the taught material, and to conduct out-of-class assignments of many types, with full internet access.

The Department has been planning the transition to the “3+3+4” educational regime that will start in 2012: then Hong Kong students will normally complete their secondary school education in 3+3 years, one year earlier than now, and join a university for 4 years instead of the current 3 years. Under the new 4-year structure, students will be better equipped to face the ever changing demands of society.

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Starting in 2005, AP has offered a new course on “Foundation Physics” primarily for Mainland students entering CityU in the “Foundation Year”. These students already follow a “3+3+4” regime, so they need a “Foundation Year” to make a smooth transition from the Mainland education system to that of Hong Kong. The “Foundation Year” students are initially only admitted into a Faculty and must select a programme (and hence Department) at the end of their “Foundation Year” before entering Year 1. The “Foundation Physics” course serves in part to attract them to AP. Since most of these students have already studied physics, the course emphasizes physical concepts to complement and expand their very exam-oriented prior experience. AP is currently developing a parallel “Foundation Year” course focusing on Materials Science and Engineering, a subject to which most secondary school students are not exposed in any country.

Events

In February and March 2006, CityU hosted Physics Nobel Laureate Claude COHEN-TANNOUDJI, Professor at the prestigious Collège de France and the Laboratoire Kastler Brossel of the Ecole Normale Supérieure in Paris. Prof Cohen-Tannoudji delivered a high-profile public lecture on “Manipulating Atoms with Light: Achievements and Perspectives”, co-organized by the French Academy of Sciences, the General Consulate of France and the City University of Hong Kong.

Shortly thereafter, Prof Cohen-Tannoudji, who is also Member of the French Academy of Sciences, became CityU Chair Professor-at-Large for a period of 3 years. His first visit in this capacity occurred in February and March 2007, when Prof Cohen-Tannoudji delivered a fascinating public lecture on “Measuring Time: Atomic Clocks and Ultracold Atoms”, followed by ten high-level lectures on “Selected Topics in Atomic, Molecular and Optical Physics” hosted by AP. This series has continued during Prof Cohen-Tannoudji’s second visit in November 2007. He will visit the Department again in November 2008.
Our **Departmental Advisory Committee (DAC)**, which consists of external professional experts, makes valuable recommendations to AP on a wide range of issues affecting its future successes. Recent meeting of the DAC was held at CityU on 8 April 2008.

The Department ran a very successful **Christmas and New Year party** on 28 January 2008.

The **AP Department Society (APDS)** continues to be a very active student organization working for the well-being of our Department’s students as well as CityU more generally. One of its most visible and successful activities has traditionally been the yearly **Hong Kong – Macau Inter-school Straw Competition**, which attracts participants from many schools in Hong Kong and Macau. Thus, in 2008, the competition, labeled “Roll in the City” and requiring to construct an elevated railway with limited materials, involved over a thousand students.

Our Department and its affiliated research centers hosted a number of conferences and workshops in recent years, including:

- **Workshop on Meteorology and Climate over South China**, City University of Hong Kong, Hong Kong SAR, 5-7 December 2005.

- **Workshop on Research Agenda for Energy and the Atmospheric Environment**, City University of Hong Kong, Hong Kong SAR, 3-4 July 2006.

- **The 6th International Conference on Electroluminescence of Molecular Materials and Related Phenomena (ICEL-6)**, Hong Kong SAR, 7-10 August 2006. (hosted by COSDAF)

- **ECI Conference - Nanoscience and Nanotechnology for Biological/ Biomedical/ Chemical Sensing**, Hong Kong SAR, 3-8 June 2007. (hosted by COSDAF)
Getting in touch

We welcome enquiries and feedback. You will find more information at:

- AP’s web site:  http://www.cityu.edu.hk/cityu/dpt-acad/fse-ap.htm
- AP’s General Office telephone:  2788-7831
- AP’s General Office fax:  2788-7830
- AP’s General Office e-address:  apoffice@cityu.edu.hk
- AP’s Head of Department telephone (Prof Michel A VAN HOVE; secretary Ms Sare Wan Yi LAU):  (852) 2788-9140
- AP’s Head of Department fax:  (852) 2788-7937
- AP’s Head of Department e-address:  aphead@cityu.edu.hk