



THE HONG KONG
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香港理工大學



Faculty of
Applied Science & Textiles
應用科學及紡織學院

NEWSLETTER

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Opening Minds • Shaping the Future • 啟迪思維 • 成就未來

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Faculty of Applied Science & Textiles

應用科學及紡織學院

Welcome to the second issue of the FAST Newsletter!

As 2017 comes to an end, a series of celebratory events is finally reaching a fruitful conclusion. Sharing the joy of PolyU's 80th Anniversary, FAST proudly welcomed two Nobel Laureates in Chemistry, Prof. Johann Deisenhofer (recipient in 1988) and Prof. Aaron Ciechanover (recipient in 2004), who gave us two very inspiring lectures in November. We also organized two very successful reunion banquets celebrating the 60th Anniversary of the Institute of Textiles and Clothing and the 45th Anniversary of the Department of Applied Mathematics. Among the 550 distinguished guests, many were our outstanding alumni who had actively participated in various anniversary events to reunite and share these memorable moments with their teachers and old friends.

This season is full of commemorations and celebrations. In late October, over 1,300 graduates from our Faculty received their academic awards at the 23rd Congregation. It is always a delight to celebrate a rite of passage in the lives of our young graduates, who are well equipped with professional knowledge and ready to embark on a new stage in their

life's journey. We wish them every success in their future endeavours.

Looking forward, FAST will continue to provide the highest quality education to students and nurture the best graduates to meet the changing needs of society. Witnessing significant changes in Hong Kong's fashion and textile industry in recent years, we have recently revamped our undergraduate programme in the Institute of Textiles and Clothing to provide stronger manpower support in product design and development, international sales and marketing, research development and innovation. The revised curriculum will definitely groom competent professionals to support the evolution of the fashion and textile industry.

Thank you for reading and my warmest wishes for the festive season.

Prof. Wong Wing-tak,
Chair Professor of Chemical Technology
Dean, FAST

歡迎閱讀應用科學及紡織學院第二期學院通訊！

隨著2017年接近尾聲，我們舉辦的一系列慶祝盛事亦快將完滿落幕。在分享香港理工大學成立八十周年的喜悅之際，應用科學及紡織學院於11月份非常榮幸邀請到兩位諾貝爾化學獎得主Johann Deisenhofer教授（1988年獲獎者）和Aaron Ciechanover教授（2004年獲獎者）為我們發表了兩場充滿啟發性的講座。我們亦舉辦了兩場團聚晚宴，慶祝紡織及製衣學系成立六十周年以及應用數學系成立四十五周年。在550位嘉賓中，有不少是我校傑出的校友。他們積極參加各種紀念活動，與老師和舊朋友共聚一堂，分享難忘時刻。

我們在本季舉辦了豐富的紀念和慶祝活動。十月底，學院1,300多名畢業生在第23屆畢業典禮上獲授予學術學位資格。這對年青的畢業生來說是人生的一個重要里程碑，對我們來說也是一個值得慶祝、令人欣慰的時刻。畢業生們具備良好的專

業知識，並做好踏上人生新旅途的準備。我們衷心祝願應屆畢業生在未來事業取得成功。

展望將來，本院將繼續為學生提供最優質的教育，培養頂尖人才，以滿足社會不斷變化的需要。鑑於香港時裝及紡織業近年的重大變化，我們近期修訂了紡織及製衣學系的本科課程，藉以為產品設計與開發、國際銷售與營銷、研究開發及創新提供更強大的人力支援。相信修訂後的課程定能培養出更優質專才，進一步支援時裝及紡織業的發展，與時並進。

謹祝大家聖誕快樂，新年進步！

應用科學及紡織學院院長
化學科技講座教授
黃永德教授

Bridging the Divide

– Interview with **Prof. Chen Sheng**,

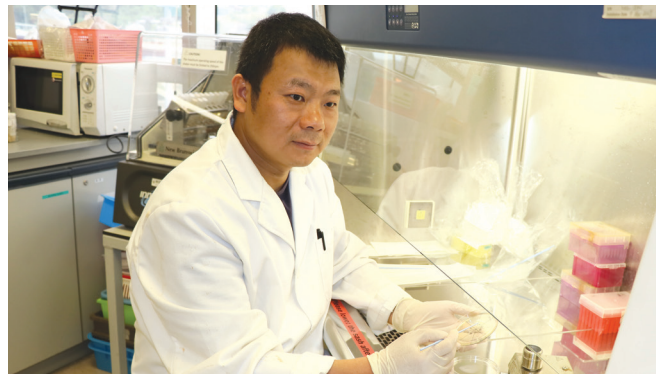
Professor, Department of Applied Biology and Chemical Technology

Veterinary medicine and food microbiology are two seemingly distinct fields, but **Prof. Chen Sheng**, a global leader in food safety research, has identified specific links between the two fields in his work conducted at the Department of Applied Biology and Chemical Technology, generating unexpected discoveries. With both a Doctorate of Veterinary Medicine and a PhD in Food Microbiology, Prof. Chen brings both the expertise and experience needed to study the routes by which pathogens enter the food chain and then cause human infections, with the aim of preventing disease and improving human health.

Indeed, drawing insights from unexpected parallels is a hallmark of Prof. Chen's career. While at the Medical College of Wisconsin in the United States, he made a breakthrough discovery in understanding the structure function of the deadly foodborne botulinum neurotoxin known as the "beauty and the beast toxin", so named because it can be used to treat disease but at the same time as a bioweapon. "Toxins can be friend or foe, depending on how we use them", Prof. Chen explained.

Hence, immediately after the 9/11 terrorist attacks, the US government provided full support for Prof. Chen's research, which resulted in engineering a new form of botulinum neurotoxin that can be used to treat hypersecretion symptoms such as auto-immune diseases in humans.

Prof. Chen's research now focuses on antimicrobial resistance, which again involves a duality: the antibiotics he works with can "both treat diseases and cause new problems". As part of that work, he has made a further breakthrough while at PolyU,



recently discovering the hyper-resistant and hypervirulent *Klebsiella pneumoniae*. This newly emergent superbug can cause fatal infections in relatively healthy individuals, posing an enormous threat to human health.

Prof. Chen said he is now collaborating with clinicians in local hospitals to investigate the genetic features of clinical *K. pneumoniae* isolates, with the goal of crippling transmission of this superbug.

Ultimately, Prof. Chen strives to bridge the divide between helpful and harmful by devising new approaches to engineering and/or using toxins and bacterial pathogens, aiming to provide solutions to various food safety and human health issues. Prof. Chen concluded by commenting that these world-leading research skills are what he aims to pass onto his students: "I try to provide my students with the right tools to do good research, so they have a strong skillset that renders them highly employable after graduation, and are well prepared for future challenges."

因此，「9·11」恐怖襲擊事件發生以後，陳教授的研究獲得美國政府的全力支持，促使其成功工程化一種可以治療人類分泌過多症比如自身免疫疾病的新型肉毒桿菌神經毒素。

陳教授目前研究的重點是抗生素的耐藥性，而該研究再次涉及二元性：他研究的抗生素「在治療疾病的同時引發新的問題」。在香港理工大學，他在細菌的耐藥性研究方向取得突破性成果，發現了高耐藥性及高毒力肺炎克雷伯菌。這種新型超級細菌可對相對健康的人造成致命性感染，對人體健康構成巨大威脅。

陳教授表示，他目前正與當地醫院的臨床醫生合作，調查臨床肺炎克雷伯菌分離株的遺傳特徵，以研究可行性的方法來阻止這種超級細菌的進一步傳播。

陳教授致力通過設計構建或使用毒素及細菌性病原體的新方式建立有益及有害毒素之間的聯繫，最終為食品安全與人類健康問題提供解決方案。他打算將這些世界領先的研究技術傳授給他的學生：「我想設法為學生提供做好研究的合適工具，這樣他們才能培養專長，畢業後可以具備較強的就業競爭力，並為未來挑戰做好準備。」

建立聯繫

— 陳聲教授專訪
應用生物及化學科技學系教授

獸醫學與食品微生物學是兩個看似不同的領域，但食品安全研究領域的先驅、應用生物及化學科技學系**陳聲教授**卻將這兩個領域的研究緊密聯繫起來，取得豐碩的研究成果。陳教授擁有獸醫學博士學位和食品微生物學博士學位，具有研究病原體通過何種途徑進入食物鏈進而引發人類感染方面的背景和經驗，其以預防疾病，改善人類健康為研究目的。

事實上，從意想不到的相似之處吸取洞見是陳教授研究職業生涯中的主要特點。在美國威斯康辛醫學院學習期間，陳教授在研究致命食源性肉毒桿菌神經毒素結構和功能方面取得了突破性進展。食源性肉毒桿菌神經毒素因可用於治療多種疑難疾病，但同時也是一種生化武器而被譽為「美女與野獸毒素」。「毒素可以是朋友，也可以是敵人，這視乎我們如何使用。」陳教授解釋說。

Revolutionizing the Information Highway

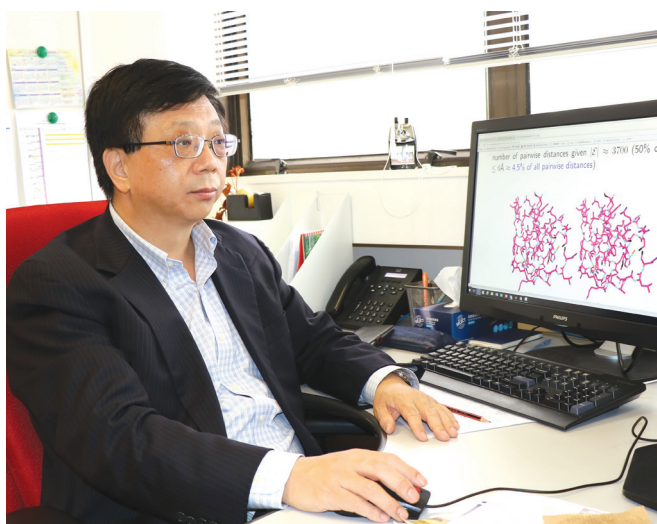
– Interview with Prof. Sun Defeng,

Chair Professor, Department of Applied Mathematics

The Information Age is an era in human history characterized by the shift from an economy of industrialization to one of computerization. Growing up in mainland China just after the Chinese cultural revolution, Prof. Sun Defeng first discovered the concept of a technological uprising in the book titled *The Third Wave* by Alvin Toffler.

Fascinated by Toffler's prediction that an information highway would connect people around the world through computer technology, Prof. Sun said that he realized he was bound for a career in computer science.

Today, Prof. Sun, Chair Professor at the Department of Applied Mathematics, is a world leader in mathematics research. He optimizes matrices and statistics, reducing complexity



and rendering scalable information usable for big data computation.

"Every person in the world emits data to the information highway. We go to movies, buy books, search the Internet", Prof. Sun explained. "But how do we record this data and study it in a mathematical context, when the data is complex and the dimensions are huge?"

To resolve this problem, Prof. Sun devised a world-recognized second-order sparsity solution that renders data with more precision and depth than traditional methods, efficiently separating useful from useless data and uncovering minute information on a large scale.

This solution is the first of its kind and is beneficial across all industries and research fields, revolutionizing the way we leverage data and predict behavior on the information highway.

We know now that Toffler's prediction has been realized with the advent of the Internet, and the curiosity that drove Toffler is the same that drives Prof. Sun. It is also what drew Prof. Sun to PolyU, a university he recognizes as fostering academic curiosity: "the campus is compact, which is advantageous because it is easy to connect with people, share ideas and explore curiosities", he said.

That unending desire to understand is what Prof. Sun also hopes to pass down to his students, the next-generation drivers of technological innovation on the information highway.

資訊高速公路改革

— 孫德鋒教授專訪
應用數學系講座教授

資訊時代是人類歷史從工業化經濟向電腦化經濟轉變的時代。成長於中國內地文革剛結束時期的孫德鋒教授在阿爾文·托夫勒的「第三次浪潮」一書中首次發現了技術起義的概念。

孫教授被托夫勒關於資訊高速公路將通過電腦技術將世界各地的人連接在一起的預言深深吸引，開始意識到自己必須從事電腦科學相關的工作。

目前，擔任應用數學系講座教授的孫教授已成為數學研究領域的全球領導者。他優化了矩陣和統計學，降低複雜度，並將可擴展資訊應用於運算大數據上。

「當我們在網上購買電影戲票、書本或者搜尋資料時，其實全球每個人都在不知不覺間向資訊高速公路發送了資料。但當面

對複雜且維度龐大的資料時，我們如何記錄它們並在數學的領域內加以研究？」孫教授解釋道。

為解決這個問題，孫教授設計了一個世界公認的二階稀疏解決方案，提出比傳統方法更精確、更深入的方式呈現資料，有效地從無用資料中抽取有用的數據，從而發掘大量的微量資訊。

該解決方案為全球首創，為人們在資訊高速公路上摘取、運用資料和預測行為，帶來革命性的改變，有助於所有行業與科研的發展。

托夫勒的預言如今已隨著互聯網的出現得到了實現，而好奇心則是驅動托夫勒與孫教授不斷研究的核心因素。這也是孫教授選擇加入香港理工大學的原因，他又指理大是一所激發學術好奇心的大學：「校園設施集中是一個優勢，可以更輕易與人交流、分享觀點及探索好奇心。」

孫教授希望能夠將永無止境的好奇心傳遞給他的學生，成為推動資訊高速公路技術創新的新力軍。

Lighting the Way

– Interview with **Prof. Yu Siu Fung**,
Professor, Department of Applied Physics

What draws a leading light in the field of laser technology to PolyU? For **Prof. Yu Siu Fung**, the attraction was academic freedom. After studying in England and working in the US and Singapore, in 2010 he joined PolyU's Department of Applied Physics, "where we are able to perform our research and teach our students with greater tenacity to continue improving the ways that society can benefit from laser technology and illumination innovation."

And he is certainly doing that. As a top researcher in the analysis, design and fabrication of lasers, Prof. Yu has made world-leading contributions to improving laser-facilitated systems, with a special focus on the nonlinear characteristics of laser light.

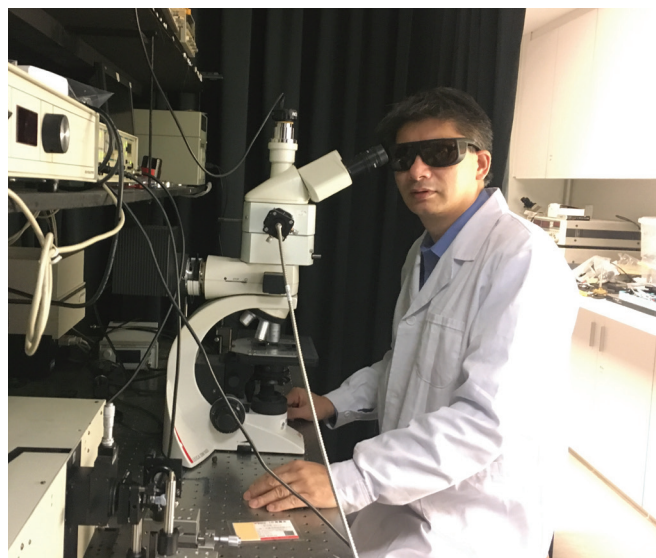
A recent example of Prof. Yu's work is the development of the world's first deep ultraviolet lasing emission from up-conversion nanoparticles. Overcoming the considerable technical challenge involved, he and his team facilitated what he called "short-distance free-space communication for military use". These results are particularly important at the national level because such technology is subjected to international export control and sorely needed within China.

Another example of Prof. Yu's prowess in laser research is the award-winning zinc oxide-based UV laser diode that he and his team developed to generate random lasing. The innovation here lies in the use of batteries rather than another laser as the excitation source – "this makes ZnO lasers compact and convenient to use", he explained.

Prof. Yu and his team have also found a significant way to

shine light in other areas during recent years, discovering that carbon-nanodots can be used to replace yellow phosphor (rare earth materials) as the emission medium of white-light LEDs. This has a potential application in advanced lightings, he explained, and has the added benefit that using carbon-nanodots "lowers costs because they are one of the most abundant elements in nature".

Even more importantly, the use of these nanodots to replace yellow phosphor (mining and refining of rare-earth materials significantly pollute the environment) would save the world from environmental damage, Prof. Yu said. By developing environmentally friendly solutions in the national interest, he is certainly showing us all the way ahead.



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照亮前程

— 余兆豐教授專訪
應用物理學系教授

是什麼將激光科技領域的中堅力量吸引到香港理工大學？對於**余兆豐教授**而言，這離不開學術自由。在英國留學並在美國和新加坡工作後，他於2010年加入理大應用物理學系。
「在這裡，我們能夠更好地進行研究及教授學生，以創新激光科技及照明技術惠及社會。」

這也是余教授的宗旨——作為激光分析、設計和製造領域的頂級研究員，余教授致力於激光非線性特性的研究，在改善激光輔助系統方面作出了世界領先的貢獻。

余教授的最近一項工作成果是開發出全球首創來自上轉換納米粒子的深層紫外激光發射科技。在克服了巨大的技術挑戰後，他和團隊成員實現了他命名的「軍用短距離自由空間通訊」突

Colouring our World

– Interview with **Prof. John Xin**,

Lee Family Professor in Fashion and Textiles,

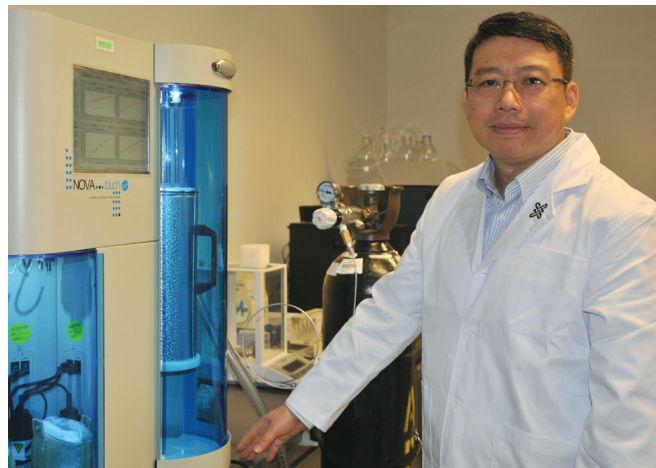
Head and Chair Professor of Textile Chemistry, Institute of Textiles and Clothing

Colour is a psychological experience unique to each person, appearing to and affecting us differently based on our own perceptions of reality, explained Prof. John Xin, Head of the Institute of Textiles and Clothing. Prof. Xin believes that coloration is one of the most important functions of textile chemistry – if a garment's colour is perceived negatively, consumers may not be compelled to purchase it, creating problems for designers, manufacturers and sellers.

As a chartered colourist, Prof. Xin is advancing the textiles industry, developing award-winning, world-renowned technologies that revolutionize how we use garments and fabrics in ways most unexpected.

By studying marine organisms that remain strongly affixed to rocks even under crushing ocean waves, he developed bio-inspired adhesive materials and applied it to colour on fabric, creating a new dyeing method that not only ensures the colour is resistant to washing but also uses less resources and is more eco-friendly than traditional dyeing methods.

To further improve the environmental footprint of textiles, Prof. Xin developed self-cleaning fabrics for use in carpets, curtains, blankets, work uniforms and more. "These fabrics do not have to be washed as frequently, which saves water, detergent, time, energy and prevents the deterioration of ecology", Prof. Xin elaborated. This first generation of self-cleaning material won a Gold Medal at the Geneva International Exhibition of Inventions in 2006.



Prof. Xin's list of inventions also includes the world's first highly accurate, image-based system that measures the full spectrum of colour on various surfaces, for which he won a Gold Medal at the Geneva Exhibition in 2013. "Now we can measure all fabrics and designs, lace, prints, and 3D objects, such as buttons", he explained. "Efficiency is much improved for all industries that need colour accuracy."

Prof. Xin believes that making colour is one thing, but making it work is another. At PolyU, he has the scope to do just that. "I treasure the academic freedom that PolyU provides. Here, we are able to explore, think and share ideas to teach students, cultivate our research and apply it to bettering industry in unique and adventurous ways".

讓世界繽紛多彩

— 忻浩忠教授專訪

李氏時裝及紡織教授席

紡織及製衣學系·紡織化學講座教授兼系主任

顏色是每個人獨有的一種心理體驗，根據我們對現實的感知不同而顯得不同，並以不同方式影響著我們，紡織及製衣學系主任忻浩忠教授解釋說。忻教授認為染色是紡織化纖最重要的功能之一：如果衣物的顏色予人負面的感覺，那麼消費者就不會購買它，這就會給設計者、製造商和銷售商帶來麻煩。

作為一名特許著色師，忻教授開發出多項享譽全球及屢獲殊榮的科技，以最意想不到的方式，徹底改變了我們對衣服和織物的使用方式，從而推動了紡織業的發展。

透過研究那些即使受到強大的海浪衝擊，仍能緊緊依附於岩石上的海洋生物，他研製出了仿生黏合材料，並應用於織物染色，發明了一種不僅耐洗不掉色，而且更節約資源的染色方法。這種染色方法比傳統方法更生態環保。

為進一步改善紡織品的環境足跡，忻教授研製出自潔織物，可用於地毯、窗簾、毛毯及工作服等。忻教授表示：「這些織物無需經常清洗，可以節約水、清潔劑、時間、能源並防止破壞生態。」第一代自潔材料在2006年日內瓦國際發明展上更榮獲了金獎。

忻教授的發明還包括全球首個可測量各種表面的全色譜、基於圖像的高精確系統。此系統在2013年日內瓦展上榮獲金獎。他解釋說：「現在我們可以測量所有織物和設計圖、蕾絲、印花以及3D物體，如鈕扣，大大地提高了所有需要色彩準確性的行業的效率。」

忻教授認為色彩製作是一回事，但讓它發揮作用則是另一回事。而香港理工大學則為他提供廣闊的空間，「我珍惜理大所提供的學術自由。在這裡，我們能夠探索、思考和分享意念，以教育學生、潛心研究，並以獨特和創新的方式將其應用於行業改進。」



AMA 45th Anniversary Celebration Dinner

The Department of Applied Mathematics (AMA) celebrated its 45th anniversary in 2017. Throughout this special year, the Department has organized a series of academic and commemorative events to honor this occasion. On 12 October 2017, AMA held a successful Anniversary Celebration Dinner at the BP International Hotel as a finale to the year-long celebrations. Over 340 guests, including alumni, former and current staff, students and VIP guests, got together to catch up with old friends and classmates and to celebrate the growth of the Department.

Under the theme, 'We grow, we thrive, we shine', a list of exciting performances and activities was designed for the night to showcase the transformations and development of AMA over the years. Following the welcoming speech by Prof. Chen Xiaojun (Head of the Department), VIP guests including Prof. Philip Chan (Deputy President and Provost), Prof. WT Wong (Dean of the Faculty of Applied Science and Textiles) and four former Heads of the Department officiated an opening and toasting ceremony. To mark this important milestone, a special video depicting the story of AMA over the past 45 years was premiered during the dinner. The guests enjoyed the video while recalling their memories of the University and the Department. Among the old familiar faces, we were all very grateful to see the first Head of Department, Prof. Kam Wai Kee, and three graduates of 1976 who flew back from Australia to join this meaningful occasion. They shared their joyful memories and expressed excitement about the achievements of the Department. Other than the warm and touching moments, guests were all thrilled with the mini games, performances and the highly anticipated lucky draw, which made a wonderful and extraordinary night even more memorable.



應用數學系 四十五周年慶祝晚宴

2017年是應用數學系(AMA)成立的45周年紀念，學系在年內舉辦了一系列學術交流及紀念活動，以慶祝這個特別時刻。2017年10月12日，學系在香港龍堡國際酒店成功舉辦了周年慶祝晚宴，為為期一年的慶祝活動劃上圓滿句號。包括校友、前任和現任職員、學生和嘉賓在內的340多位來賓，齊聚一堂，共敘朋友之情與同窗之誼，共同慶祝學系的發展和成長。

慶祝晚宴以「We grow, we thrive, we shine」為主題，籌備了一系列精彩的表演活動及遊戲，展示了學系多年來的變化和發展。在陳小君教授（學系系主任）致歡迎辭後，陳正豪教授（理大常務及學務副校長）、黃永德教授（應用科學及紡織學院院長）及四位前學系系主任等眾嘉賓主持開幕和祝酒儀式。為了紀念這個重要的里程碑，在晚宴上還首次播出紀錄了應用數學系45年間成長及發展的特輯，讓來賓們重溫他們對香港理工大學和應用數學系的美好回憶。在熟悉的面孔中，我們欣然見到第一任學系系主任甘偉基教授及三名專程從澳洲回港的1976年畢業校友出席這有意義的活動。他們均對學系取得的成就深感振奮。除了感受溫馨感人的時刻外，來賓還觀賞了表現環節、參與精彩遊戲和備受期待的幸運大抽獎，令這個愉快的晚上更添難忘。



*Hang on your door to leave a message
to your colleagues/friends!*

**Be Back
Soon**





掛在門上，給同事/朋友留點點訊息！



On
Holiday

ITC 60th Anniversary Banquet

2017 marks the 60th anniversary of the Institute of Textiles and Clothing (ITC). Over 200 distinguished guests from different sectors, staff and alumni came together at the Ceremonial Banquet on 31 August 2017 at Hotel ICON, to reunite and share their fond memories of the past 60 years.

In his welcoming remarks, President of PolyU, Prof. Timothy W. Tong, JP, commended the contributions of the Institute. "On both the education and research fronts, ITC has been continuously innovating to contribute to the development of society."

The guest of honour, Hon Chung Kwok-pan, LegCo member (Textiles and Garment), shared his views on the future prospects of the textiles and garment industry. "We have the foundation and infrastructure ready. We have to be competitive. Therefore, we have to move towards design and technology. All of this depends on ITC, PolyU, to supply the talent and manpower."

Apart from the introduction to the eight future ITC initiatives, the dinner also featured a pop opera performance featuring the song *I Dreamed a Dream* from *Les Misérables*, symbolizing how our fashion designers are inspired by ITC to be practical dreamers.



紡織及製衣學系

六十周年紀念晚宴

2017 年適逢紡織及製衣學系(ITC)成立 60 周年。學系於 2017 年 8 月 31 日，在唯港薈舉辦了紀念晚宴。包括各界人士、職員和校友在內的 200 多名賓客聚首一堂，分享他們過去 60 年的愉快記憶。

香港理工大學校長唐偉章教授，在致歡迎辭時嘉許了學系的貢獻。「在教育 and 研究兩個方面，紡織及製衣學系一直持續不斷地創新，為社會的發展作出了重要貢獻。」

宴會貴賓、香港立法會議員（紡織及製衣界）鍾國斌先生，就紡織與製衣行業的未來前景發表了看法。「我們已經打好了堅實基礎並已做好基礎設施準備。我們的競爭力源自設計和科技，因此香港理工大學紡織及製衣學系肩負著培育人才和提供人力的使命，日益重要。」

除了介紹紡織及製衣學系八項未來提案外，晚宴上還特別舉行了一場來自音樂劇《悲慘世界》的歌曲《我曾有夢》的流行歌劇表演，象徵著我們的時裝設計師如何受到紡織及製衣學系的啟發，從而實現夢想。



Teaching philosophy :

Teaching is Connecting



Dr Chris Lo,
Associate Professor, Institute of Textiles and Clothing
Awardee, Faculty Award for Outstanding Performance/
Achievement in Teaching 2016/17



The passion to acquire new knowledge should start from the subject lecturer; otherwise, how could we convince the students that the subject is worth learning?



It has been my privilege to contribute to fashion business education over the past 7 years. It is not about how much I have taught in class, it is about how many “connections” I have made. After 7 years of observing my outstanding colleagues, some of whom have spent over 20 or 30 years nurturing generations of PolyU graduates and excellence in research, I have come to the conclusion that **Teaching is Connecting**.

Teaching is connecting People to People

The teacher-student relationship is a lifelong one. The moment we step into the classroom, or the moment we are assigned to teach a subject by the Department, the relationship starts. The class is also a place for connecting students (for group projects), connecting industry experts with students (via mentorship and seminars) and connecting students to the world (via international competitions).

Participating in the world retail congress competition is really a great teaching experience. Being a coach for 5 years (2011 to 2015), I found coaching top students to be a priceless experience. “Top student” does not refer purely to their



Photo of the Jelly Fish (wall size)

Photographer : Mr. David Poon

Title: “Satellite”

Taken at Swallow Grotto (燕子岩), Sai Kung, Hong Kong

One of the photos in this photo series won “Outstanding Award” in AFCD's Underwater Photo Contest 2014



outstanding academic achievements, but also to their determination to succeed. Luckily, we won three championships and one first-runner up, competing against other top fashion business schools around the world. The vital part is how well we connect our students to form a competitive team and achieve an unrealistic goal, inspire their minds with the latest innovations and connect them to the world's best companies. These students have become my friends and I trust these friendships will be lifelong.

Teaching is connecting People to Knowledge

This is the only part that is assessed in our teaching performance, and inevitably the core part of university education. To me, this part is comparatively straightforward, because there are many tools that help us deliver knowledge in better and more interactive ways (e.g. uReply, Blackboard). However, being a professional student for so many years, what remains in my memory is not what my professors taught, but how passionate they were about the topic (or research). The passion to acquire new knowledge should start from the subject lecturer; otherwise, how could we convince the students that the subject is worth learning? Allow me to quote Steve Jobs' commencement address delivered to graduates at Stanford: “Stay hungry, stay foolish”. This is also very true for teachers.

教育哲學：

教學在於連結

— 盧君宇博士

紡織及製衣學系副教授

學院傑出表現 / 成就獎 (教學) 2016/17 得獎者



軍。關鍵之處在於我們如何將學生連結起來，形成一個有競爭力的團隊以及實現看似遙不可及的目標，利用市場上最新的創新成果啟發他們，並將他們與世界上最好的公司連結起來。這些傑出學生均成為了我的好友，而我相信我們的友誼將會延續終身。

教學在於連結人與知識

這是我們教學業績評估的唯一部分，亦無可避免地成為大學教育的核心部分。對我而言，這個部分相對簡單，因為有很多工具（例如：uReply、Blackboard）可以幫助我們以更好、更互動的方式傳授知識。然而，作為多年的專職學生，我記住的不是教授所教的東西，而是他們對論題（或研究）的熱情。獲得新知識的熱情應該始於課程講師；否則，我們如何讓學生相信課程值得學習？請允許我引用喬布斯在斯坦福大學畢業典禮演講中送給畢業生的一句話「求知若饑，虛心若愚」。為人師表，更當如此。

教學在於連結知識與知識

在開發新課程的過程中，我不得不將所有相關論題和研究的資訊聯繫起來。這亦迫使我去了解最新的研究和行業前景。這個過程要求很高，卻很有價值。它甚至帶給我資助研究的全新思路。我們透過連接以前的知識來產生新的理解，有時，它能幫助我成為一名更好的研究人員。由於我太熱愛在課堂上分享我的研究成果，有時忘記了小息和下課時間。但令我欣喜的是，在學生意見調查(SFQ)中，我未曾收到過關於課堂休息時間太少的投訴。

最後，我非常享受與紡織及製衣學系、應用科學及紡織學院以及香港理工大學的連結。希望我的學生和同事亦有同樣的感受。

Ms. Miyuki Cheng, ITC PhD Candidate,
MA (Global Fashion Management) Graduate

獲得新知識的熱情應該始於講師；否則，我們如何讓學生相信課程值得學習？

在過去七年裡，我有幸為時裝行業教育作出貢獻。這無關乎我在課堂上教授了多少東西，而是我建立了多少「連結」。我目睹一同共事的優秀導師花了20或30多年的時間悉心栽培一代又一代香港理工大學畢業生和研究人才，並從中得出**教學在於連結**的結論。

教學在於連結人與人

教與學的關係是終生的。從我們走進教室的那一刻起，或者從被委派去教授某個科目的那一刻起，這種關係就開始了。在課堂上，我們透過小組項目連結學生與學生、透過指導和講座連結學生與行業專家，以及透過國際比賽連結學生與世界。

參與世界零售大會比賽確實是一個很好的教學體驗。作為一名擁有五年（2011年至2015年）輔導經驗的導師，我發現輔導「高材生」實是一種無價的經歷。「高材生」並非只是學業成績傑出，而是有著追求成功的決心。在與全球其他頂級時裝業學院的競爭中，我們幸運地獲得了三個冠軍和一個亞

Teaching is connecting Knowledge to Knowledge

During the development of new subjects, the process forced me to connect information on all of the relevant topics and research. It also forced me to learn about the latest research and industry outlook. This process is demanding but valuable. It even brought me new research ideas for grant proposals. We generate new understanding by connecting previous knowledge, and sometimes it helps me to become a better researcher. The major drawback is that when I share my research in class, I often miss the break and forget the time. I am so glad that there were no complaints about the break time in class in the student feedback questionnaire (SFQ) survey.

After all, I enjoy being connected to ITC, FAST and PolyU. I hope that my students and my colleagues feel the same.



Dr Di Fan, ITC PhD Graduate,
Assistant Professor, School of Business,
Macau University of Science and Technology





WiseEye – Breakthrough Technology for Fabric Inspection

“
*Compared with 70%
inspection accuracy of
human visual checking
method, the WiseEye
can achieve over 90%
inspection accuracy.*
”

– Prof. Calvin Wong,
Cheng Yik Hung Professor in Fashion,
Associate Head of Institute of Textiles and Clothing

Today, using images or pictures for decision making has become popular and crucial in our daily lives, while fundamental research on computer vision (CV) and artificial intelligence (AI) techniques has become a hot topic brought about by the rapid technological advancements in computing technology in the past decade.

Challenge to Automating Fabric Inspection Process in Textile and Apparel Industry

Fashion retailers do not expect to find holes, broken yarns, slubs, etc. on apparel, as substandard merchandize greatly influences the brand's reputation and business success. As a customer, the fashion merchandize you purchased with defects will cause you a bad experience to the fashion

brand. Along the fashion value chain, various checkpoints are established to evaluate the quality of textile materials in which fabric inspection is a vital step to ensure the quality of fabric and identify defects before making up a quality apparel product. Although there are a few automatic fabric inspection systems on the market, they can only be used to inspect fabric with a simple weave and colour, such as greige fabric and white colour. As apparel is always made from fabrics with different weaving structures and colours, these automatic fabric inspection systems definitely cannot fulfill the current industry needs, and thus almost all textile mills and apparel manufacturing enterprises still rely on manual visual inspection methods. However, labours are subject to fatigue and boredom, and thus inspection results are often unreliable and inconsistent.

From the perspective of academic research, fabric defect detection is considered a texture analysis problem because the fabric surface can be recognized as a two-dimensional patterned texture. Over the past three decades, various vision-based approaches and related techniques have been proposed to address this problem. However, no system based on these techniques has been developed for practical use. There are two reasons for this: first, each detection technique is limited to a particular type of fabric and defect, and second,

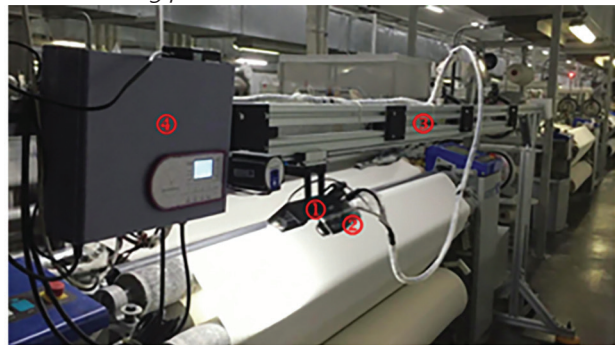
all of the techniques have their own limitations and have only been verified in a controlled environment, not a real-life manufacturing environment. Thus, the current image-based defect detection algorithms and techniques developed through fundamental research cannot be applied to all fabrics with very different structures, colours and defect types.

Impact on the Academic Research Community and Textile and Apparel Industry

In view of these problems, my research team has recently developed various novel and advanced image feature extraction algorithms using CV based techniques, namely 1) low rank and approximate orthogonal sparse embedding; 2) robust discriminant regression; and 3) regularized label relaxation linear regression to effectively detect common fabric defects on woven fabrics with most types of solid colour.

These three feature extraction algorithms generated through fundamental research have been adjusted and extended to real life application for fabric inspection. Using hardware with integrated illumination and image capturing devices and the three algorithms, we have successfully developed an intelligent fabric defect detection and grading system prototype named "WiseEye". It is also integrated with the weaving machine so that fabric manufacturing and inspection can be carried out simultaneously. The WiseEye can automatically locate and measure defects on most types of woven fabrics with different weaving structures and solid colours on a real-time basis. It has now been adopted in a large-scale textile manufacturing plant. Compared with 70% inspection accuracy with human visual checking, the WiseEye achieves over 90% accuracy. The WiseEye is a breakthrough technology and the first of its kind for integrating with weaving machine which can practically help automating the fabric inspection process. With the use of this new technology, it is foreseeable that the quality of fabric can be greatly assured and the economic value generated will be remarkable.

Photo depicts the operation of WiseEye in a textile manufacturing plant



Trial run: WiseEye is integrated with a weaving machine in a textile manufacturing plant

試行：在一個紡織工廠中將WiseEye與紡織機整合

- ① Illumination Device 照明裝置
- ② Image Capturing Device 圖像採集裝置
- ③ Moving Rail 傳送帶
- ④ Controller 控制器

WiseEye : 織物檢測的突破性科技

— 黃偉強教授，
鄭翼雄時裝教授席、紡織及製衣學系副系主任

人工視覺檢測方法的檢測精準度
只有 70%，而 WiseEye 的檢測
精準度則可達到 90% 以上。

在當今的日常生活中，利用圖像或圖片來進行決策日趨流行和重要。過去十年，電腦科技的快速發展則令電腦視覺(CV)和人工智能(AI)科技的基礎研究成為一個熱門的話題。

紡織及服裝行業織物檢測自動化面臨的挑戰

時裝零售商不希望在服裝上發現破洞、斷紗及毛頭等，因為不合格的商品會嚴重影響品牌的聲譽及銷量。而購買到有疵點的商品會令消費者對該品牌產生不愉快的購物經驗。現時，整個時裝價值鏈中已建立出各種檢驗點來評估紡織品的質量，其中，織物檢測是在生產出優質服裝產品之前，確保織物質量和識別疵點的關鍵步驟。雖然市場上已有一些自動化的織物檢測系統，但它們只能用於具有簡單編織式樣和顏色的織物的檢測，如坯布和白色。由於服裝總是用編織結構和顏色各異的面料製成，所以這些自動化的織物檢測系統並不能滿足目前的行業需要，因此，幾乎所有的紡織廠和服裝生產企業仍依賴於人工視覺檢測方法。但由於工人容易疲勞和悶煩，因此，檢測結果常常是不可靠的。

從學術研究的角度來看，織物疵點檢測被認為是一個紋理分析問題。這是因為織物表面可以被視為二維圖案紋理。在過去三十年，人們提出了各種基於視覺的手法和相關技術來解決這個問題。但是，還沒有一個基於這些科技、可投入實際使用的系統。究其原因，一是每種檢測科技都局限於特定類型的織物和疵點；二是所有科技都有局限性，只能在受控環境，而非實際生產環境下通過驗證。因此，目前透過基礎研究開發、基於圖像的疵點檢測算法和科技還無法應用於結構、顏色和疵點類型各異的所有織物。

對學術研究團體和紡織及服裝行業的影響

針對這些問題，我和研究團隊最近開發多種新穎和先進、基於電腦視覺科技的圖像特徵提取算法，即1)低秩近似正交稀疏嵌入；2)魯棒判別回歸；以及3)正則標籤鬆弛線性回歸，用以有效檢測大多數單色織物的常見織物疵點。

這三種透過基礎研究產生的特徵提取算法已經被調整和擴展到織物檢測的實際應用中。利用具有集成照明和圖像採集裝置的硬件以及這三種運算法，我們成功開發出一個名為「WiseEye」的智能織物疵點檢測和分級系統原型。它可與紡織機整合，實現織物製造和檢測同時進行。WiseEye可以實時自動定位並測量大多數具有不同編織結構的單色織物的疵點。目前，WiseEye已經在一個大型的紡織工廠得到了應用。相對於人工視覺檢測方法70%的檢測精準度，WiseEye的檢測精準度可達到90%以上。WiseEye是一項突破性科技，也是第一個實現與紡織機整合的織物檢測過程自動化科技。隨著這項新科技的使用，可以預見織物的質量將得到很大程度的提升，並且由此產生的經濟價值更為顯著。



To foster students' interest in Mathematics, Biology, Chemistry and Physics, FAST has organized the Secondary School Mathematics and Science Competition (SSMSC) in Hong Kong for the past few years. This year, we further extended the footprint of the competition to seven cities in mainland China, including Beijing, Changchun, Chengdu, Hangzhou, Shenzhen, Wuhan and Xian. The top 20 mainland contestants joined the PolyU Science Star Summer Camp from 6-18 August 2017. During the 2-week camp, FAST arranged an array of activities including cross-disciplinary lectures, workshops, tours and study projects that allowed participants to experience our diverse learning environment and cutting-edge technology at PolyU.

為了提高中學生對數學、生物、化學及物理等學科的興趣，理大應用科學及紡織學院在過去多年於本地舉辦高中數理比賽。今年更將比賽足跡延伸至中國內地七個城市，包括北京、長春、成都、杭州、深圳、武漢和西安。二十名內地尖子在千餘名中學生當中脫穎而出，於8月6日至18日期間赴港參與「科學新星培育計劃夏令營」。學院為同學安排了一系列跨學科講座、研討會、參觀、專題研習等，讓同學體驗理大優良的學習環境及尖端的科研設備，啟發及培育未來科技新星。

Students' Feedback 學生感想



"The PolyU Science Star Summer Camp offered me a chance to learn about quantum mechanics. Absorbing knowledge from top researchers and professors through lectures and visits to Astronomical Centre and Food Factory reminds me that Science is real life!"

「我一直對於物理學感興趣，尤其是對量子力學津津樂道。參加夏令營讓我有機會從學識淵博的教授和研究人員身上學習量子力學的基礎。透過參觀天文館及食品製造工廠，我更深刻體會科學與生活真的是息息相關。」

by Ruoyu Wong from Shenzhen
來自深圳的王若宇同學



"What impressed me most were the stunning and incredible laboratories on PolyU campus. I got the chance to operate the laboratory instruments. The satisfaction and excitement from the experience were indescribable."

「令我們印象最深刻的是一系列的理大實驗室導賞，讓我親身體驗走在科學前沿的高新技術。以前只能在課本上看到的實驗室儀器，如今在夏令營中真實地呈現在我們眼前，那種滿足和興奮是難以言喻的。」

by Shiyu Hu from Chengdu
來自成都的胡石語同學

The Secondary School
Mathematics and Science
Competition 2018 (Hong Kong Section)
will be held on **29 April** and **1 May 2018**.

Stay tuned!

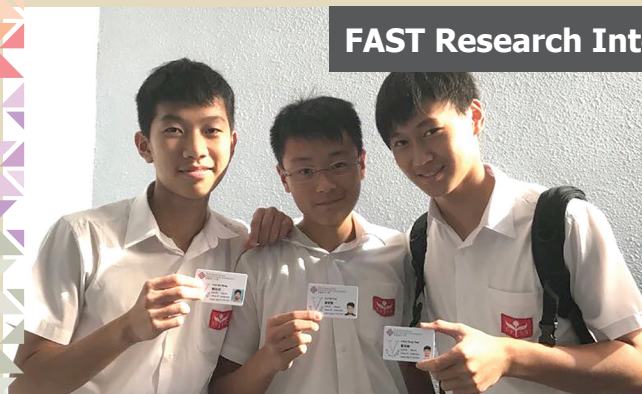
高中數理比賽2018 (香港賽區) 將於**四月二十九日**
及**五月一日**舉行。詳情請瀏覽:

<https://www.polyu.edu.hk/ssmsc>

For highlights of the camp, please visit our webpage:

有關夏令營花絮，請瀏覽以下網頁:

<https://www.polyu.edu.hk/fast/en/news-events/media-corner/video/index.html>



The year-long FAST Research Internship Programme aims to nurture talented and gifted students in Science from secondary schools. Awardees of the Hong Kong Budding Scientists Award, co-organized by the Hong Kong Association for Science and Mathematics Education and the Gifted Education Section of the Education Bureau, were invited to join the FAST Research Internship Programme commencing in July 2017. Under the guidance and supervision of researchers from PolyU, 18 elite students engaged in research projects in various intellectually stimulating disciplines and gained hands-on experience in laboratory experiment and field trips.

Through the programme, Dr Daihai He (Assistant Professor of Department of Applied Mathematics) and a group of researchers co-authored with Edwin Tang, a student from St. Paul's Co-Educational College, a research paper on the topic *"Anti-phase Synchronization of Influenza A/H1N1 and A/H3N2 in Hong Kong and Countries in the North Temperate Zone"*. Tang said, "I have touched upon many new ideas in statistical analysis, which is not something we could explore in the secondary school curriculum. It has been my pleasure to work under the guidance of Dr He. I have learnt a lot about mathematical models and influenza as well as how to predict the results through observation from graphs; for instance, the influenza dominance alternates each year between H1 and H3. It was a wonderful experience and I hope I can put in more effort on the analysis and contribute to the research project in the future."

為培育中學的資優學生在科研方面的興趣及才能，理大應用科學及紡織學院於2017年7月首度舉辦了為期一年的「中學生研究實習計劃」。十八位於香港數理教育學會及教育局資優教育組合辦的「香港科學青苗獎」中嶄露頭角的得獎者獲甄選參與計劃。在教授及研究人員悉心栽培下，高中學生能夠親身參與具啟發性的研究項目，體驗相關實驗及進行實地考察。

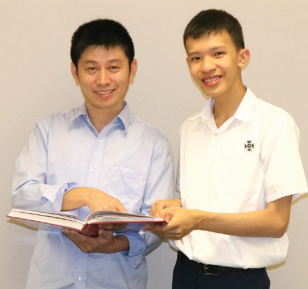
透過是次計劃，應用數學系的何岱海博士與聖保羅男女中學的鄧同學聯同其他研究員組成研究小組，攜手撰寫了一篇有關於甲型流感H1N1及H3N2於香港及北溫帶地區反相同步化的研究論文。「參與研究實習讓我接觸到中學基本課程以外的範疇，當中包括統計學分析的原理及應用，實在獲益良多。在理大的研究人員及何博士的循循善誘下，我學習了很多數學模型及統計學推論的知識，雖然只是冰山一角，但我仍期望將來學有所成，可以繼續為研究出一分力。」

"It was a precious opportunity for us to explore the research projects in science and textiles at this early age. Instead of memorizing facts and equations for assignments and exams, we learned how to define a problem and tackled the challenges through the research internship programme."

"The programme helped us to develop insightful perspectives on our areas of interest. It also motivated me to be a self-starter and to manage my time better. I believe these skills and rewards will be valuable assets in paving my future."



Faculty of
Applied Science & Textiles
應用科學及紡織學院

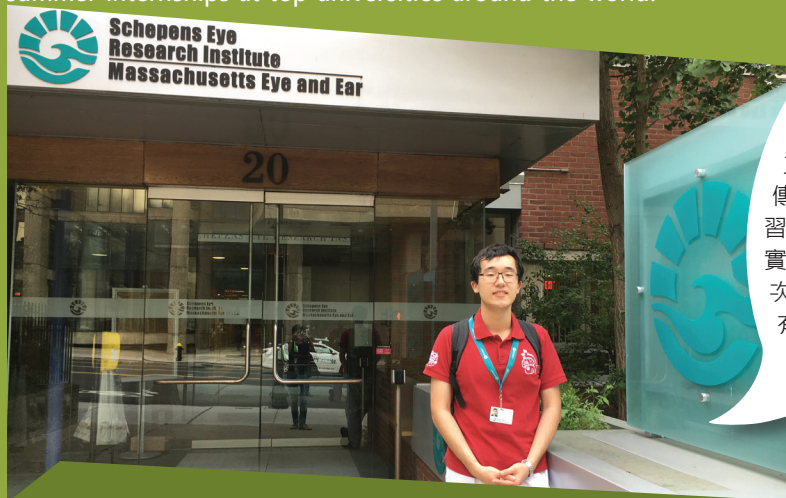


Students' Feedback 學生感想

He Yi 何一

– BSc(Hons) in Applied Biology with Biotechnology

The education I received in the *Department of Applied Biology and Chemical Technology* equipped me with the necessary theoretical knowledge and practical skills in the field of biology. As the ABB programme is relatively small, we were able to develop close relationships with each other and with our professors, who not only passed on knowledge but who also provided us with many excellent opportunities, such as obtaining summer internships at top universities around the world.



I was fortunate to be selected as one of the students to join a summer internship programme at Harvard University in my third year of study. Apart from the valuable research experience, this memorable journey reinforced a major lesson we, as students, all learned at ABCT: it is not necessary to be a genius in order to succeed - passion and hard work contribute significantly. Finally, as an added benefit, the Department provides access to external consultants who run tailored workshops to help students achieve their career goals. I am very grateful for the effort made by our Department and professors toward ensuring our success in the future. If I were to choose again, I would, without question, choose the same major at PolyU.

作為應用生物及化學科技學系的大四學生，我在這裡獲得的教育使我具備了生物領域所需的理論知識及實務經驗。應用生物兼生物科技這專業並不大，同學之間、同學和教授之間的關係親近融洽。教授不僅傳授我們知識，還給我們提供許多赴國外頂尖大學實習的機會。我有幸於大三暑假獲選赴哈佛大學醫學院實習，既獲得了寶貴的科研經驗，又開闊了眼界。這次海外實習也印證了在學系裡學到的一課：不一定只有天才才能成功，更重要的是對學科的熱誠和勤勉學習。另外，學系也安排了各類專業工作坊，幫助同學實現自己將來的工作願望。在此，我真誠地感謝學系為我們作出的各種努力。如果讓我再次選擇，我無疑會選擇理大生物專業。

Li Yanke, Coulson 李衍鏢

– BSc(Hons) in Investment Science

理大提供了很好的平台讓我充實自我和發掘潛能。透過課程學習和課外培訓，我不但掌握了有關統計、數學和金融的綜合知識，也提升了如程式設計的技術能力。我還參加了很多學術性比賽如數學建模比賽，進一步提升研究能力及開拓視野。

我於2015年暑期參與有關生態旅遊的服務學習，讓我體會到運用所學知識去服務社群的重要性。一年後，我參加了理大組織的上海實習計劃，使我初步接觸到金融科技。2017年暑假，我順利完成了在德國的技術交流，並積累了寶貴的資料採集和機器學習的項目經驗。感謝理大和應用數學系為我未來的職業發展鋪路。



PolyU has provided a good platform for me to enrich myself and develop my potential. Through program studies and extra-curricular workshops, I have not only obtained comprehensive knowledge of statistics, mathematics and finance, but also strengthened my technical skills such as programming. In addition, I have had plenty of opportunities to join academic contests such as the Mathematical Contest in Modeling, which further enhanced my research ability and broadened my horizon.

My service learning in summer 2015 concerning ecotourism in rural and developing regions made me realize the significance of serving the community using the knowledge I have gained. One year later, I participated in an internship programme organized by PolyU in Shanghai, which gave me initial exposure to financial technology. In summer 2017, I successfully finished a technical exchange programme in Germany, where I gained valuable project experience regarding data mining and machine learning. Thanks to PolyU and the *Department of Applied Mathematics*, I have explored many possibilities, which will benefit my future career development.

Zhou Feichi

周菲遲

– PhD Student, Department of Applied Physics

As the end of my 3-year PhD study approaches, I am getting closer to graduating. During these three years, I have been deeply impressed with the research atmosphere in the **Department of Applied Physics** and my supervisors' patient cultivation of my research skills. I have not only greatly improved my research abilities and creativities, but also made progress in my communication and presentation skills. With the help of my supervisor and group-mates, I have had the chance to present my work to audiences from different backgrounds and obtained several research awards. Along with academic life, we belong to a happy group, in which we encourage each other and do outdoor activities, which makes PhD life more fruitful. Finally, I wish every postgraduate student a wonderful and happy period of study.



時光飛逝，三年博士生的生活轉瞬即逝。讓我記憶猶新的是剛來理大時，學院裡面的學術氛圍和導師對同學耐心的培養，讓我有不斷前行的動力。在導師的細心幫助下，我不僅在科研和創新能力上都有提升，更多的是學習到了與人交流溝通以及簡報方面的能力。同時也很開心與學院同學一起共度時光，大家的不斷鼓勵與扶持，讓我博士生的生活更加豐富。非常感謝理大應用物理學系給了我提升和塑造自我的機會，也希望所有同學都有快樂的科研生活。

能夠成為香港理工大學紡織及製衣學系的學生是件很幸福的事。在學期間，我不但學到了很多實用的知識和理論，更獲得很多海外留學的機會，擴闊了我的國際視野。我有幸得到獎學金，分別到了倫敦及紐約留學，欣賞當地的藝術文化，感受不同地方的時裝氛圍。期間，我亦認識了來自不同文化背景的朋友，與他們交流對話，確是給了我很多新想法與靈感。

除學術研究外，理大還給我很多課外興趣發展的機會。例如成為理大學生大使，給我當司儀的寶貴經驗，也讓我與大眾分享學習經驗。我還有幸參與了理大劇團，加深了解演戲藝術，追求個人興趣發展。於理大生活學習的難忘點滴與得著，一生受用，畢生難忘。



Lau Cheuk In, Cherry

劉芍妍

– BA(Hons) Scheme in Fashion and Textiles

Studying at the **Institute of Textiles and Clothing** has given me precious opportunities to enrich my knowledge, broaden my international exposure and further my all-round personal development. I am very grateful that I was granted the Fung Foundation Scholarship to study abroad at the London College of Fashion for two terms. Studying at a specialized art school and visiting various museums and fashion exhibitions not only deepened my understanding of arts and fashion, but also expanded my global network by interacting with exceptional professors and students from different cultural backgrounds. In my third year, I went to study in New York as an exchange student at the Fashion Institute of Technology. The journey was very fulfilling and memorable, and I had many fruitful experiences. From appreciating fashion shows and participating in a school drama performance to writing for a school newspaper and magazine, I was able to further realize my personal interests.

In addition to striving for academic excellence, PolyU also showers students with many opportunities to improve their holistic development. I was nominated as a PolyU student ambassador, giving me the opportunity to be an MC at the Jockey Club Auditorium and to share my school-life experiences with prospective students. In addition, I was able to deepen my understanding of performing arts through becoming a cast member of the PolyU Theatre. Everything that I have experienced and gained from the years at PolyU has been precious and very useful for my personal and professional development.

Mini-Lecture Series

FAST has launched the year-round Mini-Lecture Series in 2017/18 for secondary school students to promote their interests in Science and Fashion & Textiles. Students could explore interesting research phenomena related to daily life through topics including "Batteries that drive our gadgets", "Introduction to Radio Astronomy of Hong Kong", "Experiments Outside Laboratories" and "Olympic and Sportswear Innovation" etc.

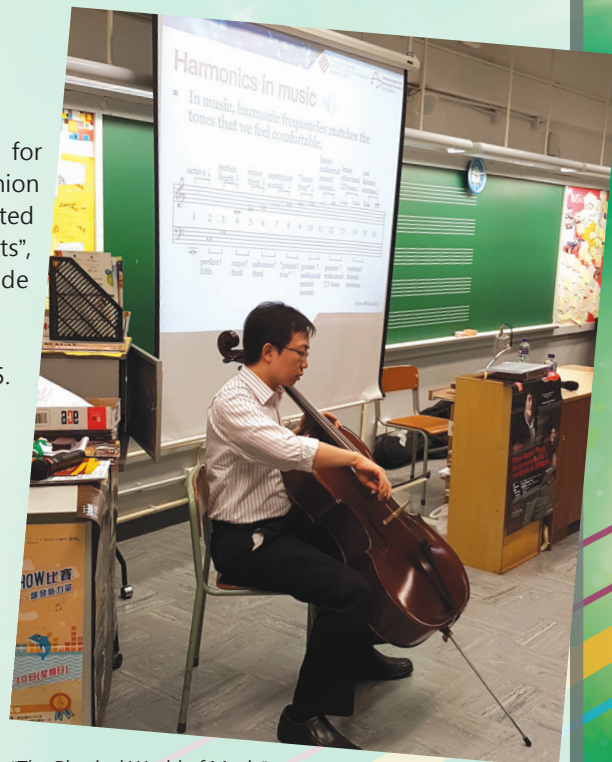
For any enquiries on Mini-Lecture Series, please contact us at 2766 5385.



Lecture on "Luxury Fashion" by Dr Joanne Yip at Yan Chai Hospital Law Chan Chor Si College



Lecture on "Ancient Chinese Mathematics" by Dr Joseph Lee at Carmel Holy Word Secondary School



Lecture on "The Physical World of Music" by Dr Kin Hung Fung at SMK MCF Ma Ko Pan Memorial College

小型講座系列

2017/18年度，應用科學及紡織學院推出了一系列為期一年的小型講座，藉以增加中學生對科學、時裝和紡織品的興趣。學生可以透過「驅動電子小裝置的電池」、「香港射電天文簡介」、「實驗室之外的實驗」以及「奧運和運動服裝創新」等主題，探索與日常生活有關的有趣研究和現象。

如需查詢有關小型講座系列資訊，請致電2766 5385與我們聯絡。



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