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

NEWSLETTER

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THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

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

Contents

Editorial Board

Welcome to the sixth issue of the newsletter!

The Faculty of Applied Science and Textiles has been highly committed to advance the development of research, teaching and learning. Recently, our research innovations are widely recognized by awards bestowed at renowned international conferences, research papers published in top-notch journals, as well as champions won at global competitions.

Apart from celebrating a number of achievements made by the Faculty's colleagues and students, I am delighted to herald the news of a goodwill project in which Dr Joseph Yung, Associate Professor of the Department of Applied Biology and Chemical Technology, led PolyU staff and students to make hand sanitisers for people in need in local community amid the outbreak of COVID-19. With the support of the Social Welfare Department, the hand sanitisers were distributed to the elderly and underprivileged in the hope of enhancing their protection against the infection of COVID-19.

Lastly, with the Faculty's 25th congregation held last autumn, may I take this opportunity to extend my sincerest congratulations to over 1,000 graduates with their academic awards conferred and wish them the best in their quest for success in careers and personal pursuits with faith and fortitude.

Wish all of you good health and have a joyful Easter. Thank you.

Prof. Wong Wing-tak,
Chair Professor of Chemical Technology
Dean, Faculty of Applied Science and Textiles

歡迎閱讀應用科學及紡織學院第六期學院通訊！

學院一直致力推動有關研究與教學的發展。最近，來自學院不同學系的研究學者於多個知名國際學術會議上獲得殊榮，另有不少研究著作於享負盛名的頂尖學術期刊發表。同時，本院同學亦於世界性比賽奪得錦標，成績卓越，令人鼓舞。

除此之外，鑒於新型冠狀病毒疫情爆發，應用生物及化學科技學系副教授容家富博士帶領理大職員和學生一同配製消毒搓手液，在社會福利署的協助下，分發予老人、基層等社會上有需要的人士。學院期望能藉此善舉協助弱勢社群預防病毒感染。

另外，學院於去年秋天舉辦第廿五屆畢業典禮。我就此衷心祝賀一千多名獲授予學術學位資格的畢業生，希望各畢業生日後憑著信念和堅毅，在追求事業和人生目標的道路上發展順利，邁向成功。

最後，祝願各位身體健康及復活節愉快。

應用科學及紡織學院院長
化學科技講座教授
黃永德教授

Investigating the power of autophagy

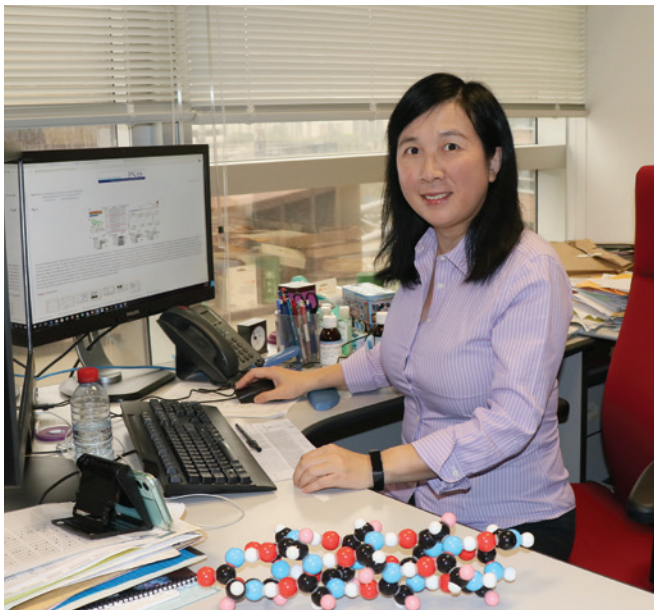
– Interview with **Prof. Zhao Yanxiang**,
Professor, Department of Applied Biology and Chemical Technology

Autophagy is the mechanism in which the body cleans out damaged parts in order to regenerate newer, healthier cells. Interestingly, “auto” refers to self and “phagy” means eat. Prof. Zhao Yanxiang is currently working on a mechanistic study of this cellular process, as it is essential for a wide range of physiological processes including embryonic development and host immunity. It is already known that dysfunctional autophagy has been associated with diseases such as diabetes, cancer, and neurodegeneration.

With ten years of research in the field of autophagy, a series of fortuitous events led Prof. Zhao to this area of research. In the process of researching ion channels for her postdoc, she became very interested in membrane-related proteins and cellular processes. Later, she came across a colleague’s paper that focused on a protein called Beclin1—a key player in the membrane-mediated autophagy process—and became inspired to conduct research in this area.

Using a combination of biochemical, structural, and functional studies, Prof. Zhao has been attempting to delineate the molecular mechanism of key autophagy proteins. In this sense, Prof. Zhao and her team do not strictly define themselves as structural or molecular biologists, and instead, use other suitable experimental approaches to facilitate the study of autophagy proteins. Notably, one lead compound designed by Prof. Zhao and her team showed anti-cancer efficacy in preliminary animal studies.

So far, Prof. Zhao’s work on Beclin1 and autophagy has been very well received, and her findings have been published in a number of top-tier journals, such as Nature Communications and PNAS. On a broader spectrum, Prof. Zhao will continue to study the molecular mechanism of autophagy execution and regulation in order to better understand its function in physiological processes and human diseases. She also hopes to use structural studies for the rational design of autophagy modulators to harness the process of therapeutic benefits in autophagy-related diseases.



自噬的力量

— 趙燕湘教授專訪
應用生物及化學科技學系教授

自噬是指人體清理受損部份並更新出更健康細胞的機制。有趣的是，自噬的英文「Autophagy」中，「Auto」的意思是自我，而「phagy」則指吞食。自噬於許多生理過程中，如胚胎成長和宿主免疫形成等，扮演著十分重要的角色。病症如糖尿病、癌症、神經退化經已證實和自噬機制失調有關。**趙燕湘教授**致力於研究自噬過程的關鍵發生機制以及在多種模式動物體系中的失調模式，以闡述其在正常生理過程和相關疾病發生、發展中的功能。

十年前，機緣巧合下趙教授開展了關於自噬的研究。她於博士後期間專注於離子通道（ion channel）的研究，在此期間中她對膜類蛋白質（membrane-related proteins）和此類蛋白的內膜轉運過程產生了莫大興趣。及後，她閱讀了一篇由同事撰寫、有關Beclin1蛋白質的論文。Beclin1在細胞膜主導的自噬作用中不可或決。趙教授受到這篇論文啟發，遂進一步展開於這方面的研究。

趙教授和她的研究團隊綜合生物化學、結構生物學和細胞生物學等多種實驗手段對自噬機制進行深入研究，為在自噬過程中起關鍵作用的蛋白質作結構解析和功能界定。在結構和功能研究的基礎上，趙教授的團隊通過和另一個化學科研團隊的跨學科合作，研發出一個可以調節自噬過程的先導化合物，並於初步動物研究中顯示其具抗癌療效。

趙教授在beclin1和自噬上的研究備受國際學術界肯定，研究成果已於多個頂尖研究刊物上發表，如《Nature Communications》及《美國國家科學院院刊（PNAS）》。趙教授將會繼續研究自噬的分子機制，進一步瞭解其於生理過程和人類疾病中所發揮的作用，期望以自噬蛋白的結構為基礎，設計及開發創新型的自噬調製化合物（Autophagy Modulator），並將其用於自噬相關疾病的治療。

Multi-physics phenomenon: Where different worlds collide

– Interview with ***Prof. Lin Yanping,***
Professor, Department of Applied Mathematics

Mathematical modelling, analysis, and numerical simulations plays a vital role in today's sciences and engineering due to the rapid developments of super computers. Understanding a particular type of numerical method can be based on real engineering applications and can facilitate a better understanding of the physical phenomena associated with moving or stationary interfaces. There are a wide range of applications in this domain – from financial option pricing, to questions in biology, such as tumour growth and cancer modelling. **Prof. Lin Yanping** is currently looking into the development, analysis, implementation, and application of efficient numerical methods for interface problems arising in the mathematical modelling of diffusion processes, electrodynamics, and shape optimizations.

One of Prof. Lin's main areas of focus is the multi-physics phenomenon. In simple terms, multi-physics refers to simulations that involve multiple physical models or multiple simultaneous physical phenomena. In a relatively narrow sense, this includes coupled physical phenomena in computer simulations as well as the study of multiple interacting physical properties. Complex as it may seem, multiphysics is something that we experience every day in the physical world. For instance, various types of physical phenomena exist in different spatial and temporal scales: from atoms to galaxies and seconds to centuries.

Prof. Lin explains, "it is well known that efficiently solving interface problems is critical for numerical simulations in many applications of engineering and sciences, including fluid dynamics, electromagnetic problems, and so on". For the mathematical modelling of interface problems (multi-physics phenomenon), the unique feature of Prof. Lin's research is that the computational mesh for the immersed finite element/volume methods can be formed independently of the moving interface, but its local basis functions incorporate interface location and interface jumps. This allows the numerical solutions to capture more accurate details of the physics, with different configurations of the interface location and/or topology.

As a mathematics professor, one of the biggest challenges for Prof. Lin is to provide rigorous theoretical analysis and proofs (which generally require novel ideas and analytical techniques) of very efficient numerical methods, even if they have already been successfully used in practice.

多物理場現象：不同世界的交接點

— 林延平教授專訪
應用數學系教授

隨著超級電腦的快速發展，數學模型、分析和數值模擬的技術在今日科學及工程領域中舉足輕重。了解數值方法在實際工程上的應用情況可以幫助理解有關移動或固定介面的物理現象。這個領域的應用十分廣泛，包括金融期權定價和生物學，例如建立腫瘤生長和癌症模型。**林延平教授**目前正在研究有效的數值方法的開發、分析、實施和應用，以解決建立數學模型時的擴散過程、電動力學和形狀最佳化等介面問題。

林教授主要的研究重點之一是多物理場現象。簡單來說，多物理場是指模擬涉及多個物理模型或多個同時發生的物理現象的情況。它的狹義定義則指，電腦模擬中的耦合物理現象以及對多種相互作用的物理特性之研究。這個理論似乎很複雜，但其實是我們每天在現實世界中所經歷的。例如，不同類型的物理現象存在於不同的時空尺度，小至原子到大至銀河系；短至一秒到長至一世紀。

林教授解釋：「眾所周知，解決介面問題對工程和科學中的數值模擬應用十分關鍵，當中包括流體動力學和電磁問題等」。林教授研究集中解決數學模型的介面問題，其獨特之處是計算網格和沉浸素/體積時可以獨立於移動介面。不過，其局部基礎函數卻併入介面位置和跳介面轉。這個方式以不同的介面位置結構及拓樸學，令數值方法更精確地捕捉物理的細節。

他認為，作為數學教授的最大挑戰在於，如何教曉學生有效的數值方法和應用技巧，以及其作出嚴謹的理論分析和論證，去解釋一些在應用中已被證實有效的數值方法。學生要完成此舉，往往需要加入創新的理念及分析技巧。

Exploring the vast potential of nano innovation

*– Interview with **Prof. Daniel Lau**, Chair Professor and Head, Department of Applied Physics*

Nanomaterials are utlrasmall chemical substances or materials. These types of materials are quite fascinating and are developed to exhibit novel characteristics such as increased hardness, chemical reactivity, and conductivity, when compared with other materials that do not contain nanoscale features.

In this field, **Prof. Daniel Lau** is researching nanomaterials for a wide range of applications, such as energy storage and conversion. In particular, he has been focusing on two-dimensional materials that are one atomic layer thick, such as graphene. During his PhD, Prof. Lau was looking into a wide range of materials systems in the field of materials engineering. More specifically, Prof. Lau worked on amorphous silicon carbides for light emitting devices.

Notably, as a brilliant and ground-breaking milestone, Prof. Lau successfully prepared graphite oxide by using a “bottom-up” synthesis method (Tang-Lau method) in which the sole source is glucose. He explains that this process is safer, simpler, and more environmentally friendly compared to the traditional “top-down” method, in which strong oxidizers are involved.

In 2000, Prof. Lau began to research various carbon related materials. Later, when a single atomic layer of graphene was successfully isolated by leading scientists in this field, he began focusing on the great potential of two-dimensional materials. Graphene has a special set of properties, which makes it vastly different from other allotropes of carbon. In fact, in proportion to its thickness, it is about 100 times stronger than the strongest steel, yet has much lower density than steel. Additionally, graphene is a fantastic conductor of heat and electricity and has a lot of promise in areas including anti-corrosion coatings and paints, efficient and precise sensors, faster and efficient electronics, flexible displays, efficient solar panels, and faster DNA sequencing etc.

Prof. Lau explains that the nano world is fascinating and limitless, and he hopes to use his knowledge to invent things that are simple and accessible to everyone, such as efficient energy storage devices that are environmentally friendly.

探索納米科技的宏大潛力

*— **劉樹平教授**專訪*
應用物理學系講座教授兼系主任

納米材料是一種極細的化學物質或材料，相較沒有納米特徵的材料，有著與別不同的特性，如具備更高的硬度、傳導性及更快速的化學反應性。

在納米研究方面，**劉樹平教授**致力研究納米材料的廣泛應用，如能源儲存及轉化，當中主要研究厚度為一個原子層的二維材料，如石墨稀。劉教授在攻讀博士學位時研究有關材料工程學多種不同的材料系統，特別是非晶碳化矽（amorphous silicon carbides）於發光裝置上的應用。

劉教授成功創立「由下而上」合成方法（Tang-Lau method），只需採用葡萄糖，便能製造出氧化石墨（graphite oxide）。傳統方法「由上而下」，過程中需要加入強力氧化劑，劉教授指新的合成方法相比之下更為安全、簡單並更環保，是其研究生涯中一個重要的里程碑。

在2000年，劉教授已開始研究各種與碳相關的材料。及後，在這個領域相當具權威的科學家成功分離出厚度為一個原子層的石墨稀，劉教授自此集中研究二維材料的潛力。石墨稀具備有別於碳其他的同素異形體。具體來說，石墨稀的強度是最硬鋼材的一百倍，但密度卻遠低於鋼材。此外，石墨稀在導熱及導電的效能很高，固此可應用於很多不同範疇，如防銹塗層和顏料、高效精準感應器、高速高效電子產品、可屈曲顯示器、高效太陽能板及快速基因排序等。

劉教授認為納米科技引人入勝而且沒有極限，期望能以自己於這領域的知識研究出簡單及每個人都能使用的產品，如環保的高效能電力儲存裝置。

Expanding the horizons of fashion supply chain management

*– Interview with **Prof. Jason Choi***
Professor, Institute of Textiles and Clothing

In fashion supply chain management, conducting scientifically sound research is critical, as it helps to advance practices and contribute to the literature. Traditionally, to investigate business problems in the field of fashion, researchers have only focused on using one method, such as mathematical modelling, empirical cases, or quantitative statistics. However, these single method approaches can easily fall into the "blind men and an elephant" trap, in which the research findings do not entirely reflect what is actually happening in reality.

With this in mind, over the past two full decades, **Prof. Jason Choi** from the Institute of Textiles and Clothing has been working extensively to apply a multi-methodological approach to solving supply chain and operations management problems in the fashion industry. So far, Prof. Choi has achieved many valuable outcomes with this multi-methodological approach. For instance, he has led and organized a special issue on this topic in a leading business journal titled Production and Operations Management. Additionally, his recent research has utilised a multi-methodological approach and has been published in many leading journals such as Production and Operations Research, Journal of Operations Management, and various IEEE Transactions. Such topics include fashion boutique operations, supply contracting, and sustainable supply chain operations, to name just a few.

One useful feature of the multi-methodological approach is its ability to bridge the real world with theories. To achieve this, Prof. Choi has made solid connections with various companies from the fashion industry. His continuous hard work in this area has also attracted the attention of the industry. Notably, an e-commerce textiles platform based in Guangzhou has actively invited Prof. Choi to collaborate on various projects. Connecting with the industry also helps to promote state-of-the-art theories to practitioners, which can potentially create a high impact in many areas. With regards to fashion supply chain management, this is best shown by the use of sophisticated supply contracts supported by "non-cooperative game theory". Such principles were only found in textbooks two decades ago, but are now common practices in the industry.

Recently, Prof. Choi has been engaged in big data analytics and blockchain technologies. He has also applied the multi-methodological approach in the related research. Going forward, he hopes that more fruitful results will come in the near future.

開拓管理時裝供應鏈的視野

*— **蔡燦明教授**專訪*
紡織及服裝學系教授

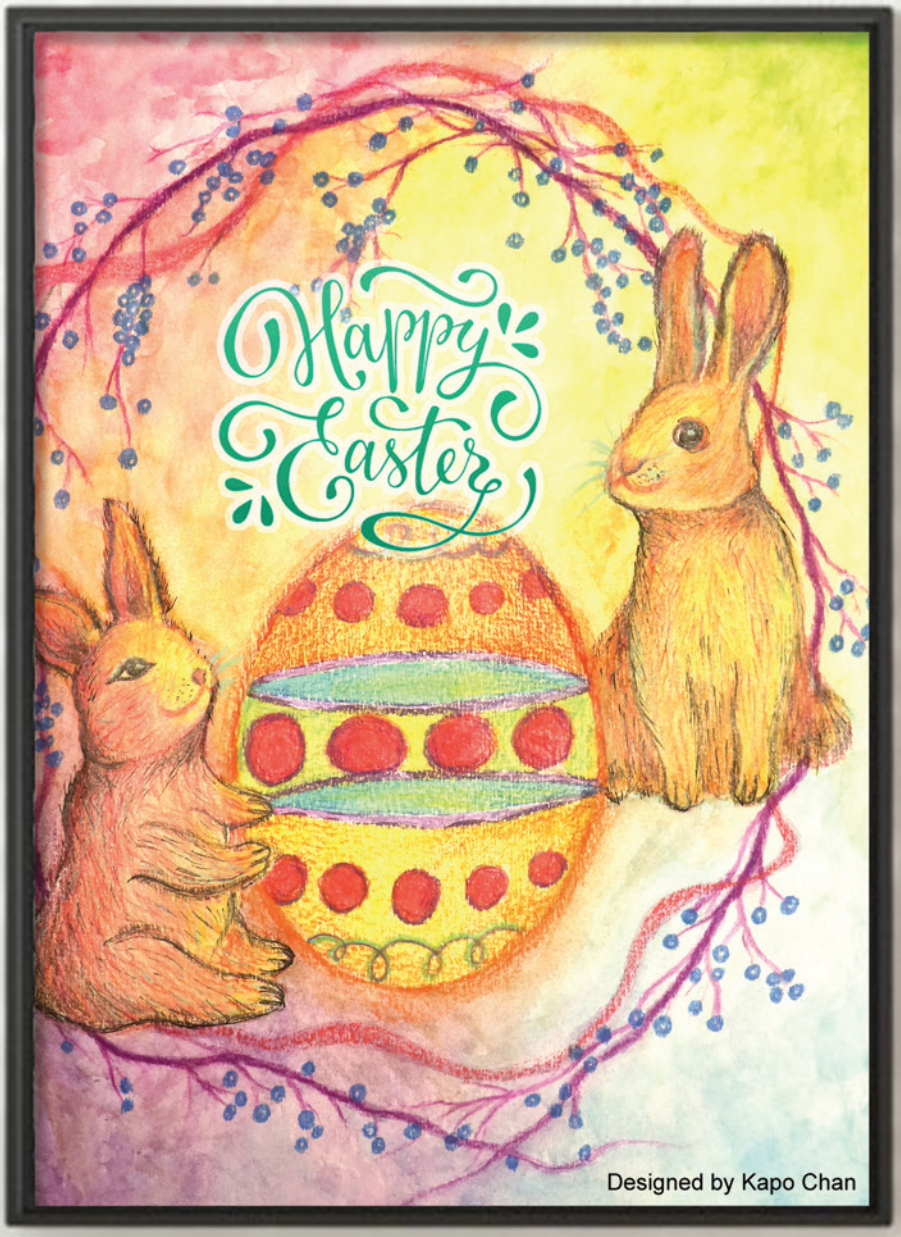
嚴謹的科學研究，有助改良時裝供應鏈管理，同時為此界別的學術文獻作出貢獻。過往研究員在解決時裝業務的問題時，只會使用單一的傳統方法，如數學模型、經驗案例或量化統計。可是，單一的方法往往令研究員容易墮入「瞎子摸象」的陷阱，令研究結果未能充分反映實際情況。

有見及此，紡織及服裝學系的**蔡燦明教授**，致力採用多重的研究方法，在過去二十年，為時裝行業的供應鏈和營運管理解決問題。到目前為止，蔡教授採用的多重研究方法，取得實質的研究價值和成果。他曾在營運商業界享負盛名的期刊《Production and Operations Management》中，領導和組織有關這項主題的特刊。此外，他的多重方法研究，最近亦於全球領先的期刊上發表，包括《Production and Operations Management》、《Journal of Operations Management》、以及《IEEE Transactions》，當中刊登的主題包括精品時裝店的營運、供應合同和可持續供應鏈營運等項目。

蔡教授的多重研究方法，能夠將理論與現實世界聯繫起來，與現實環境接軌。蔡教授與時尚界多家企業建立緊密的聯繫，而他在這領域的研究亦引起了業界關注。當中，一家位於廣州的電子商務紡織品平台，邀請了蔡教授參與多個合作項目。密切的業界聯繫有助於向從業員推廣最新的研究理論，對行業產生巨大的影響。在時裝供應鏈管理中，最佳的實證是體現了「非合作性博弈論」的複雜供應合同，這項20年前僅在教科書中找到的理論，現在於業界已經成為慣例。

近年，蔡教授致力研究大數據分析和區塊鏈技術的應用，還在其他研究中應用了多重研究方法，相信未來會取得更豐碩的研究成果。

FAST 25th Congregation 學院第二十五屆畢業典禮



Celebrate this Easter with a heart filled with peace, joy and cheers!

PolyU receives donation from Suga International Holdings Limited to support sustainable urban green agriculture

On 21 August 2019, PolyU received a generous donation from Suga International Holdings Limited (SUGA) for the establishment of Hong Kong's first urban agriculture research platform. Operated by PolyU's Food Safety and Technology Research Centre (FSTRC), the laboratory is named as the "Suga Research Laboratory for Sustainable Urban Green Agriculture" (SUGA Laboratory) in recognition of the company's contribution to the University. Prof. Sophia Chan, Secretary for Food and Health of the HKSAR Government, Dr Ng Chi-ho, Chairman and Managing Director of SUGA, and Prof. Jin-Guang Teng, PolyU President were invited as the officiating guests of the naming ceremony.

With the use of innovative technology, urban agriculture (e.g., hydroponics) enables sustainable food production in modern city landscapes. It offers the advantages of efficient use of land and natural resources, reduction in the use of pesticides and artificial fertilizers, the protection of crops against natural hazards, etc. With the support of the Laboratory, PolyU will aspire to serve as an information hub to facilitate sustainable urban agriculture development in Hong Kong, the Greater Bay Area, and mainland China. The Laboratory will also help foster a "Healthy Eating" culture to safeguard public health.

理大獲信佳國際集團有限公司捐贈 支持可持續城市綠色耕種研究

香港理工大學（理大）於2019年8月21日獲信佳國際集團有限公司慷慨捐助，建立香港首個促進城市耕種的研發平台。實驗室命名為「信佳城市綠色耕種研究實驗室」，以表彰集團對理大的支持，實驗室將由理大「食物安全及科技研究中心」負責營運。於命名典禮當日，香港特別行政區政府食物及衞生局局長陳肇始教授、信佳國際集團有限公司主席兼董事總經理吳自豪博士及理大校長滕錦光教授獲邀主持揭幕儀式。

城市耕種（例如水耕栽培）是透過創新科技於現代都市的規劃下實現可持續性生產糧食。與傳統農業相比，城市耕種具有很多優勢，包括土地和天然資源的有效利用、減少農藥和化肥的使用及避免自然災害對農作物的影響等。理大期望透過實驗室的研究，成為資訊交流中心，全力推動香港、大灣區及中國的城市耕種可持續發展，培養「健康飲食」文化以及保障公眾健康。

Poster Presentation-cum-Closing Reception of PolyU Research Internship Programme 2018/19

FAST organized a year-long PolyU Research Internship Programme 2018/19, which aimed to nurture talented and gifted secondary school students in the field of science. Seven elite participants shared their research projects and findings with their mentors and teachers on 5 July 2019. Certificates were presented to the participants for their outstanding achievements.

理大中學生研究實習計劃2018/19分享會暨嘉許禮

應用科學及紡織學院舉辦為期一年的「中學生研究實習計劃2018/19」，旨在培育資優高中學生於科學研究方面的興趣和才能。七位獲甄選參與計劃的中學生於2019年7月5日匯報及分享一年以來的研究實習成果，並於教授和老師的見證下獲頒發嘉許狀。

Participants 參加者：

CHAN Wing Kin 陳穎鍵 LEE Wing Hong 李永康	Carmel Pak U Secondary School 迦密柏雨中學
LAU Chun Yin 劉俊弦 WONG Wai Hoi 黃煒凱	Diocesan Boys' School 拔萃男書院
CHAN Sum Yee 陳心怡	HKBU Affiliated School Wong Kam Fai Secondary and Primary School 香港浸會大學附屬學校王錦輝中小學
KAN Wing Chiu Esther 簡穎昭	HKCCC Union Logos Academy 香港華人基督教聯會真道書院
IP Chun Yin 葉振延	Po Leung Kuk Tong Nai Kan Junior Secondary School 保良局唐乃勤初中書院
CHEN Wanshi 陳宛詩	Shun Tak Fraternal Association Seaward Woo College 順德聯誼總會胡兆熾中學

Admission of 14-year-old student in bachelor programme of AMA

IP Chun Yin, Manson, demonstrates impressive flairs for mathematics. He equipped his knowledge about mathematics through self-learning at a young age and achieved brilliant results in International Advanced Level (AL) examination by attaining A in Mathematics in 2018 and A* in Further Mathematics in 2019 when he was 13 and 14 respectively.

Participating in the Faculty's Research Internship Programme 2018/19, Manson was able to have regular scholarly discussions on various mathematics aspects with Prof. Cedric Yiu, Dr Raymond Sze and Dr TK Pong of the Department of Applied Mathematics (AMA) as his advisors. He also attended the lectures and completed major assessments of three AMA subjects. Manson was then admitted to BSc(Hons) in Investment Science and Finance Analytics of AMA at the age of 14 in 2019-20. We take pride in nurturing young talents like Manson in their quest for further academic and scholastic advances.

14歲學生入讀應用數學系學士課程

葉振延（Manson）對數學具有非凡天份。Manson從小透過自修，增進有關數學上的知識，並於2018國際高考數學科及2019國際高考進階數學科中分別考獲A及A*的佳績。

透過參加理大「中學生研究實習計劃2018/19」，Manson有機會與理大應用數學系的姚嘉暉教授、施能聖博士及龐鼎基博士討論學術問題。Manson同時旁聽了應用數學系其中三個學科的課堂，並完成當中主要評核。學院一向致力培育香港年輕優秀人才，14歲的Manson於2019/20獲理大優先錄取，就讀投資科學及金融分析（榮譽）理學士學位課程，提前踏上大學之路，發揮天賦。

Teaching philosophy : *Orchestrator of holistic learning experience for fashion design*

Dr Jin Lam, *Assistant Professor, Institute of Textiles and Clothing*

"As a passionate and enthusiastic educator, I bring positive energy, anticipation, excitement and enjoyment into the classroom"

Being a fashion design educator over 10 years in the Institute of Textiles and Clothing (ITC), I have worn many hats in my career: as a life-coach, role model, advisor, supporter, listener, counsellor, facilitator and friend of the students. I am whatever students need.

Fashion Design is an interesting subject, which integrates culture, marketing, individuality and creativity in a social context. As such, fashion design education opens up an interactive dialogue among teachers and students in think tank for co-creation. One of the substantial teaching aspects that I have learned over the years is the individual expression and uniqueness of each student. In view of this, I strive to promote a creative and open atmosphere that prompts students to express their ideas, explore their design challenges, discover a design solution and achieve the design goal through the learner-centred design process. In this co-created think tank, I become a facilitator to listen, guide, accommodate and assist students with their unique strengths, abilities, needs and aspirations by offering them freedom and a sense of ownership in the immersive learning experience. Meanwhile, it allows me to tailor the individual study plan, shape the curriculum, refine the co-created design framework and employ diverse teaching methods continuously.

Learning is omnipresent in our everyday lives, from the confines of the classroom, through the local, to the global. I was honoured to develop the service-learning curriculum by adopting expressive textile arts and fashion as a caring medium of community engagement for multidisciplinary students. With the social and ethical diversity of the co-design and empathy-design teaching approach, an authentic link from classroom to the community has been established by engaging multidisciplinary students in an inclusive and responsive learning platform. The interactive co-design process promotes mutual learning experience and mentoring relationship between students and underprivileged service recipients. Last summer, an ITC student teamed up with three students from School of Nursing (SN) in the service-learning programme to serve an elderly woman with moderate intellectual disability. I was instantly impressed with their performance and mutual communication during the co-design process, the SN students demonstrated their discipline specific knowledge by customizing fabric stamps and textile arts toolkit for the service recipient, so as to motivate recipients' self-determination and self-efficacy during the design practice. By considering the physical condition of the service recipient, the ITC student, inspired by the theme of "napping

time" during the co-design workshop, suggested to interpret the design element of pillow into the prototype. Through this mutual learning opportunity, I strongly believe that fashion design education can merge diverse students' strengths, professional knowledge and interests as well as enrich their own disciplinary approach in their field by integrating multiple knowledge domains. Multidisciplinary and interdisciplinary learning approach enhances the scope and depth of learning by crossing the boundaries of disciplines and curricula.

As a passionate and enthusiastic educator, I bring positive energy, anticipation, excitement and enjoyment into the classroom. Being a "Final Year Project" supervisor throughout the years, I strongly believe that my passion is what motivates students to engage and explore more beyond the boundary of fashion design field. With this in mind, I always keep myself up-to-date with the latest fashion trends and cutting-edge technologies used in fashion, encourage and praise students' efforts, provide guidance and opportunities for student learning through an inspiring and experimental dimension. In each final year cohort, students are required to create a fashion collection with six outfits by conveying their design philosophy on the competitive runway of the graduation fashion show. Students often experience stress, failure and struggle during the design development, hence individual tutorials and open discussions foster communication and accommodation. More recently, I was delighted to be the supervisor of the "PolyU Fashion Show 2019" overall grand award winner. Her outstanding achievement was persuasive in shaping future young designers to be highly motivated leading-edge thinkers who are capable of creating innovative solutions to tackle the social challenges.

教學理念：

服裝設計學習經驗的策劃師

— 林枝衍博士
紡織及服裝學系助理教授

「作為一個充滿熱忱的教育者，我樂於帶著正能量、期望和熱情享受課堂」

在紡織及服裝學系（ITC）任職時裝設計的教育工作者十多年來，我化身成不同的角色：學生們的人生教練、榜樣、顧問、支持者、傾聽者、輔導員、誘導者和朋友。我藉著扮演不同身份以滿足學生所需。

時裝設計是一門充滿趣味的學科，是將文化、市場營銷、個性和創造力，糅合在一個社會背景。因為有著種種的特色，建立時裝設計教育智庫能夠開創師生之間的互動對話與協同設計。從我多年來教導過的學生中領悟到的，是他們每一位的獨特性和個性的表達。有鑑於此，我的旨趣是要在教學上營造一個具有創造力和開放性的氛圍，鼓勵學生表達意念、探索設計方式、發掘解決方法，並通過以學生為中心的教學方法去驅使他們實現設計目的。在這個共同參與的智庫中，沉浸式學習體驗給予學生自由和自主意識，加上我以輔導老師的角色以聆聽、指導、包容和協助學生，從而發掘他們獨特的優勢、能力、需求和志向。同時，這種體驗使我能夠制定個人化的學習計劃，調整課程教材，完善協同設計框架，並持續採用靈活而多元化的教學方法。

課室的界限由本地延伸到全球，學習在我們的日常生活中無處不在。我很榮幸能夠參與策劃「服務學習課程」，採用紡織表達藝術和時裝，作為不同學科的學生在社區參與及宣揚關愛的媒介。透過同理心和協同設計的教學方法，鼓勵學生履行社會責任，帶出社會和道德多樣性，將跨學科的學生納入一個共融和互動的學習平台，並連接課室與社區。互動式協同設計過程可以豐富學生與弱勢社群之間互相學習的經驗，更讓他們經歷角色轉化。在去年夏季的學期間，ITC的一名學生聯同三名護理學院（SN）的學生參加「服務學習計劃」，為一名患有中度智障的婆婆設計及製作服裝。她們在協同設計過程中互相溝通和交流，給我留下了深刻的印象。SN學生運用了她們的專業知識，因應婆婆的能力為她度身訂造了織物圖章和紡織藝術設計工具，並引導婆婆一同參與製作過程。這些小工具有效地提升了婆婆的自決能力和自信心。在協同設計過程期間，婆婆需要定時小休，故此ITC學生以「午睡時間」為設計主題，建議將枕頭作為設計元素融入於作品中。通過這種互相學習的機會，我堅信時裝設計教育可以結合不同學生的長處、專業知識和興趣，並通過整合多個學科領域來豐富自己的本科知識。多元學科和跨學系的學習方法能夠超越既有學科和課程的邊界，以擴大學習的廣度和深度。

作為一個充滿熱忱的教育者，我樂於帶著正能量、期望和熱情享受課堂。我擔任畢業作品的指導老師多年，深信教學熱誠能推動學生投入，突破原本的時裝設計框架並探索領域以外的可能性。有見及此，我亦不斷自我增值和留意最新的潮流趨勢與應用在時裝設計中的新科技，在同學學習歷程中以啟發性和實驗性的角度為他們提供指導，鼓勵和欣賞他們的設計成果。而在每一屆的準畢業生完成學位前，學生均有機會參與畢業時裝表演，每人展示六套服裝作為畢業時裝系列，藉此傳達他們的設計理念。在籌備畢業作品過程中，學生經常會遇到壓力、挫折和掙扎。因此，一對一的輔導課和公開討論有助同學在個人設計理念和市場價值之間取得平衡。最近，我很高興曾經指導的學生奪得「理大時裝展2019」的全場總冠軍，亦相信她的傑出成就會推動未來年輕設計師更上一層樓，成為不斷創新、應對社會挑戰的優秀思想家。

Developing a next-generation bone protective agent for postmenopausal women using cordyceps sinensis

"Our long-term goal is to develop a high quality, safe, and evidence-based bone protective agent for postmenopausal osteoporosis patients in Hong Kong"

Osteoporosis is a metabolic bone disease that is characterized by low bone mass and the deterioration of bone micro-architecture, which can lead to a high risk of bone fracture. With an increasing aging population, osteoporosis has become a serious public health issue, affecting over 200 million people worldwide and causing significant medical and socioeconomic burden. According to Hong Kong's Hospital Authority, around 4,500 hip fracture cases are reported annually, costing local hospitals over HK$400 million every year. Due to the forecasted sharp increase of Hong Kong's over 70-year-old population by 2050, the total cost of hip fracture related surgeries and hospital care is expected to drastically increase. Hormone replacement therapy (HRT) has been widely used to alleviate physical symptoms and prevent the clinical consequences of postmenopausal osteoporosis. However, with an increasing concern of HRT's link to breast cancer, stroke, thrombosis, and cardiovascular diseases, there is a clear clinical need to develop an alternative approach to manage postmenopausal osteoporosis.

Selenium (Se) is an essential trace mineral to human health. It plays an important role in many physiological functions (e.g. antioxidant defence system) and pharmacological actions (e.g. anti-cancer). In previous decades, substantial evidence has demonstrated that Se deficiency is detrimental to bone micro-architecture, which is associated with osteoporosis, suggesting its crucial role in bone metabolism. Recently, selenium nanoparticles (SeNPs) have become a new research target, since they were found to possess remarkable biological activities and lower toxicity compared to common selenocompounds in foods. Nevertheless, scientific research concerning the effect of SeNPs on bone protection is currently very limited.

Cordyceps sinensis (Berk.) Sacc. (also known as "Dong Chong Xia Cao" in China) is a precious medicinal fungus which has been used as a prestigious tonic and therapeutic remedy in China for more than 700 years. As wild cordyceps sinensis is very rare and expensive, the successful cultivation of its fourth isolated mycelia (Cs4) by the Chinese Academy of Sciences has undoubtedly facilitated both commercial production and scientific research in the past 20 years. Substantial

利用冬蟲夏草
為更年期後女性開發新一代的保骨素

— 黃家興博士
應用生物及化學科技學系副教授

「長遠目標是為香港更年期後骨質疏鬆症患者開發一種高質素、安全及有實證的新型保骨素」

骨質疏鬆症是一種骨骼新陳代謝的病症。患者的骨質密度減少，令骨骼微結構變得脆弱，因而容易導致骨折。隨著全球人口老化，骨質疏鬆症成為嚴重的公共衛生問題。此疾病正影響全球逾二億人，對社會造成龐大的經濟及醫療負擔。根據本港醫院管理局的報告，每年約有4,500宗髖關節骨折個案，涉及的醫療費用超過四億港元。香港70歲以上的人口預計在2050年前急劇增加，估計屆時與髖關節骨折相關的手術及醫療護理費用將大幅上升。目前臨床治療更年期後的骨質疏鬆症主要使用雌激素替代療法(HRT)，但最近的研究顯示，使用HRT療法會增加病人患上乳癌和心血管疾病以及中風的風險。有見及此，社會實在有迫切需要去開發新方法以預防及治療更年期後的骨質疏鬆症。

硒是人體健康必需的微量元素之一，在許多生理功能（例如抗氧化防禦系統）及藥理作用（例如抗癌）中起重要作用。過去幾十年有大量的研究指出，缺乏硒元素會破壞骨小樑結構，與引致骨質疏鬆症有密切關係，因此硒元素在骨骼新陳代謝中十分重要。近年，利用納米技術提取的納米硒，因相比一般的食物中的硒化合物，其生物相容性高、毒性低和生物活性顯著，而成為新的研究目標。可是，到目前為止，有關納米硒與保護骨骼的研究仍然有限。

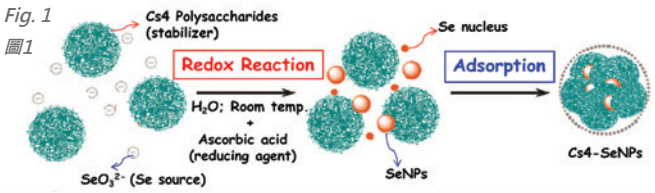


Fig. 1
圖1

冬蟲夏草是一種珍貴的藥用真菌，在中國用作進補和治療效用已有七百多年的歷史。由於野生冬蟲夏草稀少而且價格昂貴，中國科學院成功培植出四次分離的蟲草菌絲體（Cs4）大大推進過去二十年有關冬蟲夏草的商業生產和科學研究。藥理學和臨床研究顯示，多醣是Cs4中主要的生物活性成分之一，具有促進健康和治療作用，如免疫調節、抗腫瘤、以及保護骨骼等效果。

以Cs4多醣作為穩定劑，研究團隊以簡單的氧化還原系統成功研製了高穩定性的新型蟲草多醣功能化納米硒（Cs4-SeNPs）[圖1]。前期研究發現，Cs4-SeNPs對MC3T3-E1細胞（前成骨細胞）帶有顯著的劑量依賴性增殖反應（1.42-1.61倍增長）。此外，我們發現Cs4-SeNPs（10μM）可導致MC3T3-E1細胞分化 [鹼性磷酸酶活性（ALP）3.02倍增長] 以及骨礦物質化 [骨結節形成增加（Von Kossa和茜素紅S染色）]。

我們的最新研究以除去卵巢的老鼠作為更年期後骨質疏鬆症的動物模型，口服Cs4-SeNPs（25, 50 & 500 μg/kg BW/day）。在六周後，研究團隊發現Cs4-SeNPs能促進骨骼形成、減少骨質流失和改善骨骼微結構，對骨骼起著明顯的保護作用。為把Cs4-SeNPs開發成新一代的保骨素以控制更年期後引起的骨質疏鬆症，我們將進一步探討其胃腸穩定性、腸道吸收率、代謝途徑以及毒性。我們的長遠目標是為香港更年期後骨質疏鬆症患者開發一種高質素、安全及有實證的新型保骨素，提升他們的生活質素。

pharmacological and clinical studies have demonstrated that polysaccharides are one of the major bioactive constituents of Cs4, which has been found to exhibit a wide range of health benefits such as immune-modulation, anti-tumour properties, bone protection, and more.

By using Cs4 polysaccharides as a stabilizer, our research team has successfully prepared highly stable Cs4-selenium nanocomposites (Cs4-SeNPs) under a simple redox system [see Fig. 1]. We discovered that Cs4-SeNPs exhibited a remarkable dose-dependent proliferation effect (1.42-1.61 folds) on MC3T3-E1 cells (preosteoblast). Furthermore, Cs4-SeNPs (10μM) were found to markedly induce both differentiation and bone mineralization of the MC3T3-E1 cells, as evidenced by a significant increase of alkaline phosphatase activity (ALP; 3.02 folds) as well as the enhancement of bone nodule formation (Von Kossa and Alizarin Red S staining). More importantly, our recent study found that Cs4-SeNPs [25μg, 250μg and 500μg Se/kg BW/day] exhibited promising *in vivo* bone protective effects on ovariectomized mice (an animal model for postmenopausal osteoporosis) via promoting bone formation, attenuating bone resorption, and improving bone microarchitecture after oral administration for six weeks. To facilitate the further development of Cs4-SeNPs into a next-generation bone protective agent for managing postmenopausal osteoporosis, additional investigation into their gastrointestinal stability, intestinal absorption, metabolism, and toxicity will be conducted. Our long-term goal is to develop a high quality, safe, and evidence-based bone protective agent for postmenopausal osteoporosis patients in Hong Kong to improve their quality of life.

PolyU Intimate Fashion Show 2020
理大內衣時裝展2020

The Show will feature 12 collections of intimate apparel and activewear, each comprised six outfits, designed by the graduating students from the Bachelor of Arts (Honours) Scheme in Fashion and Textiles specialising in Intimate Apparel. The students will demonstrate a wide range of distinctive and forward-looking styles in their graduation projects to guests including industrialists, famous fashion designers, media friends, and fashionistas.

時裝展將會展示十二位紡織及服裝學系（內衣專業）應屆畢業同學的作品。他們每人將於時裝展內向業界人士，包括著名時裝設計師、傳媒和時尚達人等，展示一系列各六套獨特且具有前瞻性風格的內衣或運動服。

9 Jul 2020
6:30 pm (To be confirmed)
Silverbox Ballroom, Hotel ICON

ITC2S02 Static Exhibition

20 fashion prototypes with expressive textile arts will be co-designed by 80 PolyU students and 20 ex-patients from Baptist Oi Kwan Social Service. Styling photos of 20 fashion prototypes will be disseminated through static exhibition within campus. The service recipients will present their expressive textile artworks by modelling their creations themselves so that their personal expressions and inner confidences can be further encouraged.

八十位理大學生將聯同二十位來自浸信會愛群社會服務處的精神康復者協同設計二十套表達紡織藝術的時裝。作品形象照將於校內展出。康復者將親身演繹作品，以提升他們的自我表達能力與自信。

Late July 2020 (Tentative)
PolyU Campus (Tentative)

Faculty Staff
學院教學及科研人員

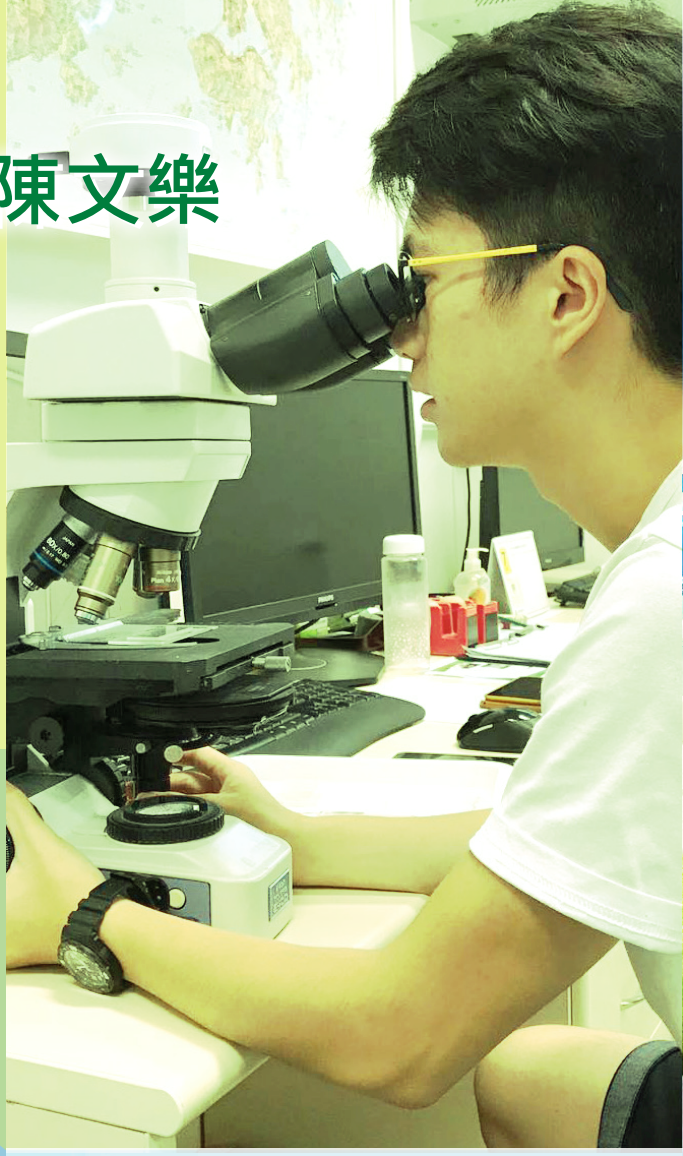
Faculty Students & Alumni
學院學生與畢業生

FAST Faculty Awards 2018/19 Category of Award – Teaching Category of Award – Research & Scholarly Activities	Dr ZHANG Hua, Teaching Fellow, AMA Dr CHAI Yang, Associate Professor, AP
"New Antibiotic Drug Candidates" received the Global Innovation Award, TechConnect World Innovation Conference and Expo 2019	Dr MA Cong, Assistant Professor, ABCT, and team
UGC Teaching and Learning Pedagogic and Active Learning Mobile Solutions (PALMS) Project snatched altogether 7 awards in The Wharton-Quacquarelli Symonds (QS) Reimagine Education Awards & Conference, The 5th e-Learning Excellence Awards at the 18th European Conference on eLearning 2019, and EduTech Asia Awards	Dr Fridolin TING, Teaching Fellow, AMA, and team
Research paper on **"Optoelectronic resistive random-access memory (ORRAM) for neuromorphic vision sensors"** published in "Nature Nanotechnology"	Dr CHAI Yang, Associate Professor, AP and team
Research paper on **"Continuous artificial synthesis of glucose precursor using enzyme-immobilised microfluidic reactors"** published in "Nature Communications"	Dr ZHANG Xuming, Associate Professor, AP and team
Research paper on **"Enhanced sieving from exfoliated MoS_2 membranes via covalent functionalisation"** published in "Nature Materials"	Dr Nicolas ONOFRIO, Assistant Professor, AP, and team
First-Class Award of the Science & Technology Advancement Award of Shandong Province	Prof. John XIN, Chair Professor, ITC
"Flexible Scoliotic Brace" received the Gold Medal and Special Merit Award at the Silicon Valley International Invention Festival (SVIIF) 2019	Dr Joanne YIP, Associate Professor, ITC
Research paper on **"Managing the visual environment of a fashion store: effects of visual complexity and order on sensation-seeking consumers"** was recognized as "Highly Commended" in 2019 Emerald Literati Awards	Dr Eunsoo BAEK, Assistant Professor, ITC
"Seeded Sonochemical Coatings" received the Global Innovation Award, TechConnect World Innovation Conference and Expo 2019	Dr Nuruzzaman NOOR, Research Assistant Professor, ITC
Two papers on optimal advertising decisions for luxury fashion brands and examining big data analytics for business operations were recognized by Wiley-Blackwell Publishers for top cited papers in the "Production and Operations Management Journal" in 2018-19	Prof. Jason CHOI, Professor, ITC
Study on green supply chain management (GSCM) published in "Journal of Operations Management" (JOM)	Prof. Jason CHOI, Professor, ITC
Paper titled **"Deviations from aspirational target levels and environmental and safety performance: Implications for operations managers acting irresponsibly"** featured in "Journal of Operations Management" (JOM)	Dr Chris LO, Associate Professor, ITC

Medal of Honour (MH) awarded by HKSAR	LEE Ka Yi, Alumnus of BSc (Investment Science), AMA
2nd Runner-up and New Talent Award, Hong Kong Young Designers Contest (YDC) 2019 and 2nd runner-up, the 9th Hong Kong Young Knitwear Designers Contest	CHAN Tsz Wa Enzo, Alumnus of BA, ITC
Champion of the 9th Hong Kong Young Knitwear Designers Contest	MAK Wing Sem Nicole, Alumnus of BA, ITC
IFFTI Initiative Award, 21st Annual Conference for the International Foundation of Fashion Technology Institutes (IFFTI)	Amy CHEN, PhD Student, ITC
World Retail Congress Challenge Award 2019	ITC BA students: Gary KWONG, Charlie LAM, Samson LAM, Vanessa WONG

CHAN Man Lok Leo, 陳文樂

– BSc (Hons) in Applied Biology with Biotechnology (2019 Graduate)



ABCT offered me different internship opportunities during my four years of study – both locally and abroad. In fact, I worked for the Agriculture, Fisheries and Conservation Department during my second-year summer break. This was a special experience as I was able to visit a fish farm and learned about the regulations and current market trends of the industry. For my second internship experience, I participated in a research project in the US. Held by a Harvard Medical School affiliate, the project focused on conducting experiments for the potential treatment of glaucoma and neuron regeneration. This was a great experience as I had to arrange my accommodation, flights, and daily living by myself. My internship in the US was also a fantastic opportunity to lead a foreign lifestyle, which is something that I will cherish forever. After this special internship, I had many great things to share with my friends and classmates. I was also able to learn more about job hunting and future work, which would have been impossible without ABCT's help.

在ABCT讀書的四年中，我得到了不少由學系提供的實習機會，包括本地及海外的工作實習。我在第二年學期的暑假到漁農自然護理署實習，可以前往漁場考察並認識與漁業相關的條例及市場趨勢。翌年暑假，我有幸參與由哈佛醫學院及其合作機構所進行的一項關於青光眼及神經復原的研究，了解到現時無法根治的青光眼，及其他突破性的治療效果。除了在實驗室中的工作實習，在美國的生活也令我有深刻的體驗，由計劃行程、交通、安排住宿、起居飲食都需要由自己一手包辦。生活在地球的另一端能讓我充分體會別國人的生活習慣，也是實習過程中的一種學習和樂趣。由ABCT提供的實習機會豐富了我四年的大學生涯及往後求職的優勢。

CHAU Wing Yan Joanne, 周咏欣

– BSc(Hons) in Investment Science

The BSc (Hons) in Investment Science programme is completely different from the business administration programme, as it focuses more on mathematical calculation and statistical analysis. When I first entered this programme, I faced many difficulties due to my weak mathematics background. I highly appreciated the timely advice and support from the teachers and staff whenever academic assistance was needed. Apart from regular classes, the department arranges various after-school workshops and training courses on data analysis and computational skills regularly. This helps strengthen our technical skills and also broadens our knowledge which prepares us for the competitive job market.

I am also grateful for the opportunity to join the exchange programme in Australia. AMA teachers provided me with helpful academic advice and assistance throughout the exchange period. This was such an unforgettable and precious experience. I have made friends with other exchange students from different countries and have refined my English through daily communication. Additionally, thanks to my overseas experience, I have become more mature and confident.

我覺得「投資科學（榮譽）理學士課程」跟一般工商管理課程的不同之處是前者較多數學運算和統計分析。我本身數學底子不是特別好，剛開始接觸時，遇上很多困難，幸好老師們都很願意解答課堂上的問題。除了常規課程外，學系會定期安排許多其他數據分析課程，學習實用電腦技術。我參加過幾個課程，這能助我好好裝備自己，對日後找工作幫助非常大。

此外，我最難忘的是上一個學期到了澳洲參加交換生計劃。過程中，我結識了來自不同國家的朋友，通過交流提升語言能力。個人成長方面，我變得更加成熟和自信。感謝學系給予我這個寶貴的機會。

TAN Eng Hao Louis

– BSc (Hons) in Engineering Physics

Being able to study Engineering Physics at PolyU as an international student is indeed a blessing. While studying my major, I have discovered the important responsibilities as a leader and a scientist, in addition to acquiring precious academic knowledge. PolyU is like the academy of new talents, nurturing us to be high-spirited like the "Spartans", to fight for the bright future of the society. Despite only having studied at PolyU for two years, I have made solid improvement on my research and leadership skills, not only through study but also training and working as a student assistant at the Department of Applied Physics (AP). Moreover, my exchange to the University of Waterloo was with no doubts an invaluable experience to me, both academically and spiritually. I am now confident and ready to step into the "arena" in my final two years at PolyU.

我作為一名國際學生，能在香港理工大學就讀工程物理學課程，實在讓我感到十分榮幸。在理大學習令我不但增進寶貴的學術知識，同時認識到作為領導者和科學家所肩負的重要責任，深深體會到理大培育有如斯巴達勇士般，具備高昂志氣的人才，為社會締造光明未來，迎接挑戰。雖然我在理大至今只修讀了兩年，而我在應用物理學系擔任學生助理所給予的訓練，大大提升了我於研究及領導方面的能力。除此之外，到滑鐵盧大學做交換生給予我無價的學術和精神上的經驗。於剩下兩年的時光，我已準備好上「戰場」了。

LI Yixiao 李轶潇

– MA in Fashion and Textile Design (2019 Graduate)

As a student from the mainland China, living in Hong Kong has given me a taste of different cultures and the diversity and inclusiveness of the city. Studying at PolyU has allowed me to experience a mature teaching environment and interactive teaching methods. Having the most advanced laboratories in Asia, along with highly experienced professors and teachers, my study at PolyU has given me a qualitative leap both professionally and personally.

I am fortunate to have met my professors at PolyU, and to have a better understanding of my personal direction. Since completing my programme, I am grateful for what I have achieved, and even more so for attending PolyU.

作為一名來自內地的學生，香港的生活使我領略到了不一樣的兩地文化以及這座城市的多元化和包容性。在理大的學習使我感受到與內地相比更加成熟的教學環境以及互動性更強的授課方式。經驗豐富的教授和老師以及全亞洲最先進的實驗室讓我在專業和人生閱歷上有了高質的飛躍。

在理大的一切於我而言是一次難以忘懷的旅程，一場不一樣的文化薰陶和一段如此值得的學術提升。我很幸運，在這裡我遇到了真摯待我的老師，而且更加明確了解個人發展方向。學期結束，感恩經歷的種種，更感謝與理大的相遇。

SSMSC Award Presentation Ceremony 2019

FAST organizes a Secondary School Mathematics and Science Competition (SSMSC) to foster interest among secondary school students in applied sciences and mathematics. The SSMSC Award Presentation Ceremony 2019 was successfully held on 28 June 2019. Teachers and parents of our medalists were cordially invited to witness their success and to share their happiness and joy at the ceremony. This year, we were thrilled to have 300 secondary schools participated in the competition, with over 6,500 participants from four subjects including Mathematics, Physics, Biology, and Chemistry. We were also extremely proud to have 130 individual medalists, one of whom excelled in all four subjects. The Best School Award was bestowed on St. Paul's Co-educational College, snatching the highest number of medals in the competition. Congratulations to all awardees!

高中數理比賽頒獎典禮2019

理大應用科學及紡織學院舉辦高中數理比賽（SSMSC），旨在提升本地中學生對數學、生物、化學及物理等學科的興趣。2019年度高中數理比賽頒獎典禮於6月28日順利舉行。獲獎同學聯同老師和親友出席，一同分享獲獎喜悅。今年SSMSC獲來自約300間中學、超過6,500位的同學踴躍參加，最終共130位獲獎。當中表現最優異的一位同學更同時獲得四個學科金獎，而「最傑出學校獎」則由聖保羅男女中學奪得。恭喜一眾實至名歸的得獎者！

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

Room TU502, Yip Kit Chuen Building
The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

Tel (852) 2766 5057-5059
Fax (852) 2362 2578
Email *For Student Enquiry:* scastenq@polyu.edu.hk | *For General Enquiry:* fast.enquiry@polyu.edu.hk