

Passion for Research

Dr Zerance Ng got his first taste of research when he was in his final year of undergraduate study at PolyU's Department of Mechanical Engineering (ME). "My final year project was about materials science and I had to conduct experiments at the department's materials laboratory. There I met many research students and sometimes joined their discussions on various engineering issues. It was a very good learning process as the discussions allowed me to develop an analytical mind. I became fascinated by research and decided to pursue a research-oriented postgraduate programme."

During his postgraduate studies at ME, Dr Ng was given the chance to serve as a researcher at the US Army Cold Regions Research and Engineering Laboratory and participated in a project related to composite materials. "The half-year training widened my intellectual horizons as I had never thought of the composite materials that I studied would exhibit such a different mechanical behaviour in low temperatures."

Upon receiving his doctoral degree from PolyU, Dr Ng became a full-time research associate at ME and later a lecturer at the University's Institute of Textiles and Clothing. "Alongside teaching, I kept on doing research. On the advice of the Head of the Institute who suggested me to choose a specific field for my own development in research, I started to explore the possibility of combining textile technologies with mechanical engineering," said Dr Ng.

In 2011, Dr Ng joined HKCC as a lecturer. Without doubt, his research experiences are beneficial to his teaching.



"The subjects that I teach – Engineering Materials and Engineering Mechanics are closely related to my research. I cite examples from my projects to supplement textbook content. What's more, I share the most common mistakes and failures in experiments with my students. By doing so, I hope they can see things from a wider perspective when they are dealing

with their own engineering projects."

Over the years, Dr Ng has taken part, either as a principal or a co-investigator, in a number of research projects with funding of more than HK\$20 million. In recent years, his research focuses on medical textiles, the latest being the development of a body-mapping tank-top for adolescents with early scoliosis. Dr Ng said, "Scoliosis is quite common among adolescent girls. To reduce the future likelihood of brace wear or surgery, we have developed a tank-top that can provide adequate support for posture correction on a daily basis. Next, we will install electronic sensors on it to transmit postural information to smart device and monitor the condition of scoliosis."

"I believe one day my research results will become marketable products, bringing benefits to the community," remarked Dr Ng.

研究熱情 始終如一

吳新培博士初嘗研究的滋味是在理大機械工程學系修讀本科課程最後一年的時候。「我的畢業專題項目是材料科學，我經常要到學系的材料實驗室做實驗。那裏聚集了很多研究生，他們會就不同的工程課題展開討論，我有時亦會參與其中。我發覺這是一個很好的學習過程，幫助我鍛鍊分析思維，我慢慢對研究產生了興趣，於是決定攻讀研究學位。」

在理大機械工程學系修讀研究生課程期間，吳博士有機會以研究交換生的身份到美國陸軍寒冷地區研究及工程實驗室，參與一項關於複合材料的研究。「那半年的研究工作擴闊了我的學術視野，我從沒想過複合材料在低溫環境下表現出如此不同的機械性能。」

取得博士學位後，吳博士留在理大機械工程學系擔任全職副研究員，之後加入理大紡織及製衣學系任職講師。「我一邊教學，一邊進行研究工作。當時紡織及製衣學系系主任提議我涉獵一些專門的主題作自己的研究發展，於是我嘗試將機械工程理論及紡織科技結合在一起。」

2011年，吳博士加入HKCC任職講師，他的研究經驗無疑對教學有一定的幫助。「我任

教的兩個科目——工程物料學和工程力學都與我的研究有關。我喜歡引用我的研究項目作例子，補充課本內容。更重要的是，我會和學生分享進行研究實驗時最常犯的失誤和失敗例子。我希望以這些實際例子刺激學生思考，讓他們以更廣闊的角度去進行專題研究，解決困難。」

過去多年，以吳博士為首的研究項目及其他合作研究項目的累計資助金額超過港幣二千萬元。近年，他致力研究作醫療用途的紡織品；最新一項研究是為患初期脊柱側彎的青少年研發塑身背心。吳博士表示：「脊柱側彎通常發生在青春期的少女身上。為了減低脊柱側彎患者日後可能需要配戴矯形架或接受手術的機會，我們研發了一件塑身背心，每日提供足夠的支撐以矯正患者錯誤的姿勢。接下來，我們會在塑身背心安裝電子傳感器，將患者的姿勢資料傳送到智能設備，以便監測其脊柱側彎的狀況。」

吳博士說：「我相信有一天我的研究成果可以推出市場，貢獻社會。」

