# Vision · Mission
# 願景 · 使命

## Vision 願景

To be a world leader in providing interdisciplinary solutions for major social challenges through advanced research and knowledge transfer activities.

通過高等的研究和知識轉移活動，成為為社會挑戰提供交叉學科解決方案的世界領導者。

## Mission 使命

- To promote, lead and support PolyU's interdisciplinary research to address major societal challenges;
- To create societal impact of the Institute's research through partnership and interaction with business, industry and government; and
- To enhance the visibility and reputation of the University as a world-leader in its strategic focus areas through impactful collaborative activities in research and scholarship.

- 推動、領導和支持理大的交叉學科研究，以應對各項社會挑戰；
- 通過與工商界和政府的合作和互動，為社會帶來正面影響；及
- 通過具影響力的研究和學術協作，提升大學於其策略重點領域作為世界先驅的知名度和聲譽。

## Contributions to the World's Sustainable Development
## 對世界可持續發展的貢獻

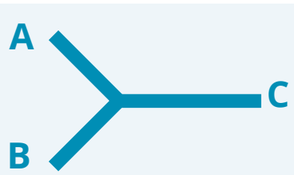
PAIR's interdisciplinary research explores and develops impactful, practical research solutions. Our research achievements can help improve human health, environment and sustainability as well as everyday living, and can help achieve many of the goals set out in the United Nations' *2030 Agenda for Sustainable Development*.

PAIR 的交叉學科研究致力探索及開發具影響力且實用的解決方案。我們的科研成果能有助改善人類健康、環境及可持續發展，以及大眾生活，並有助實現聯合國《2030 年可持續發展議程》中的多項目標。


## What is Interdisciplinary Research?
## 何謂交叉學科

Interdisciplinary research integrates knowledge, data, techniques and theories from two or more disciplines or specialties to enable new perspectives and solutions to problems which are beyond the scope of a single discipline. The interaction between disciplines or specialties may forge a new research field for further exploration. PAIR brings together over 600 researchers from 12 Research Institutes (RI) and 7 Research Centres (RC) to conduct interdisciplinary research on three themes: Advanced Technologies and Manufacturing; Good Health and Well-being; and Smart and Sustainable Cities.

交叉學科研究整合兩個或多個學科或專業的知識、數據、技術和理論，為單一學科無法破解的問題，提供新視角和解決方案。學科或專業之間的互動或會形成一個新的研究領域，供進一步探索。PAIR 匯聚了轄下 12 所研究院（RI）和 7 所研究中心（RC）共超過 600 名理大研究員，就「先進科技及製造」、「健康與福祉」、「智慧及可持續城市發展」三大範疇，進行交叉學科研究。




Interdisciplinary research: Disciplines or specialties join together to work on a common problem. Interaction may forge a new research field.

交叉學科研究：學科或專業參與解決共同問題，互動後或會形成一個新的研究領域。

# List of PAIR's Constituent Research Units
# 理大高等研究院轄下研究單位

## Research Institute 研究院

- Research Institute for Advanced Manufacturing 先進製造研究院
- Research Institute for Artificial Intelligence of Things 人工智能物聯網研究院
- Research Institute for Future Food 未來食品研究院
- Research Institute for Intelligent Wearable Systems 智能可穿戴系統研究院
- Research Institute for Land and Space 土地及空間研究院
- Photonics Research Institute 光子技術研究院
- Research Institute for Quantum Technology 量子技術研究院
- Research Institute for Smart Ageing 智齡研究院
- Otto Poon Charitable Foundation Smart Cities Research Institute 潘樂陶慈善基金智慧城市研究院
- Otto Poon Charitable Foundation Research Institute for Smart Energy 潘樂陶慈善基金智慧能源研究院
- Research Institute for Sports Science and Technology 體育科技研究院
- Research Institute for Sustainable Urban Development 可持續城市發展研究院

## Research Centre 研究中心

- Research Centre for Chinese Medicine Innovation 中醫藥創新研究中心
- Research Centre for Deep Space Explorations 深空探測研究中心
- Research Centre for Digital Transformation of Tourism 旅遊業數字化轉型研究中心
- Mental Health Research Centre 精神健康研究中心
- Research Centre for Resources Engineering towards Carbon Neutrality 碳中和資源工程研究中心
- Research Centre for SHARP Vision 視覺科學研究中心
- Research Centre of Textiles for Future Fashion 未來服裝紡織科技研究中心

Prof. TENG Jin-Guang
President
The Hong Kong Polytechnic University
滕錦光教授
香港理工大學校長

The Hong Kong Polytechnic University (PolyU) aspires to be a world-class university excelling in holistic professional education, research and knowledge transfer. To foster interdisciplinary research, the University established the PolyU Academy for Interdisciplinary Research (PAIR). PAIR is committed to driving interdisciplinary innovations and exploring impactful solutions to the global challenges of today. The Academy focuses on research in frontier areas such as artificial intelligence, carbon neutrality, deep space exploration, smart cities, smart energy and more.

I was honoured to be the Founding Director of the Research Institute for Sustainable Urban Development (RISUD), which was established in 2012. The success of RISUD inspired me to create additional interdisciplinary research institutes and centres at PolyU. Currently, twelve Research Institutes (RIs) and seven Research Centres (RCs) have been established under PAIR. The Academy serves as a hub for collaborative research, bringing together academic staff and postgraduate students from various disciplines to actively collaborate on research areas of common interests. PolyU plans to establish more RIs and RCs to elevate our research accomplishment to a higher level.

PAIR is also a hub for international research collaboration. The Academy engages and attracts world-class scholars to PolyU for interdisciplinary research, international collaboration and cross-cultural exchanges, creating a vibrant and diverse research environment.

PolyU has a long tradition of developing breakthrough innovations and technologies, with the goal of fostering sustainability, driving economic prosperity and improving communities' lives. Our mission is to bring benefits to the society and make positive contributions to the development of Hong Kong, the Nation and the world through research achievements and knowledge transfer; and of particular importance, to leverage PolyU's interdisciplinary strengths in supporting the development of Hong Kong into an international innovation and technology hub.

香港理工大學（理大）一直致力在全人專業教育、研究和知識轉移等方面追求卓越，矢志成為全球領先學府。為進一步推動交叉學科研究，大學成立了理大高等研究院（PAIR）。PAIR 以促進交叉學科創新、探索具影響力的方案為己任，藉此回應全球當前面對的各種挑戰。研究院專注於人工智能、碳中和、深空探測、智慧城市、智慧能源等前瞻領域的研究。

理大在 2012 年成立可持續城市發展研究院（RISUD），我有幸擔任創院院長。RISUD 的成功讓我深受啟發，銳意在理大成立更多交叉學科的研究院和研究中心。現時，PAIR 轄下設立十二所研究院和七所研究中心。研究院作為推動科研合作的樞紐，匯聚來自不同學科的學者和研究生，就著彼此感興趣的研究領域，積極合作。理大計劃設立更多研究院和研究中心，務使研究工作更上層樓。

PAIR 亦是國際科研合作的樞紐。研究院吸引世界級學者蒞臨理大，進行交叉學科研究、國際合作和文化交流，締造充滿活力和多元化的研究環境。

理大一直致力於突破性創新及科技，從而促進可持續發展、推動經濟繁榮、改善大眾生活。我們的使命是透過研究卓越和知識轉移，嘉惠社會，為香港、國家以至世界的發展作出積極貢獻；尤其重要的是，發揮理大交叉學科優勢，支持香港發展成為國際創新科技中心。

Prof. Christopher CHAO
Vice President (Research and Innovation)
Chair Professor of Thermal and Environmental Engineering
Director of Policy Research Centre for Innovation and Technology (PReCIT)
The Hong Kong Polytechnic University

趙汝恒教授
香港理工大學副校長（研究及創新）
熱能及環境工程講座教授
科技及創新政策研究中心主任

PolyU commits to research excellence and addresses global challenges with practical innovations. Through interdisciplinary collaborations, we discover knowledge and transform research outcomes into impactful solutions, with an aim to improve human well-being, boost economic efficiency, and foster a better world.

The PolyU Academy for Interdisciplinary Research (PAIR) is an advanced research platform with constituent research institutes and research centres covering various research areas of strategic importance. We extend the frontiers of knowledge to explore and develop solutions to critical global challenges. Our highly qualified researchers are from all over the world, bringing a wealth of achievements and expertise to our programmes and projects. In addition, our world-class labs and state-of-the-art research facilities, including our state key laboratories, the Chinese National Engineering Research Centres (Hong Kong Branches), and the various excellent research facilities on campus, have all supported our researchers to actively explore and innovate.

PAIR is one of the pillars of PolyU's strategic portfolio in research and innovation. In addition to supporting interdisciplinary research, partnering with world-renowned scholars, and enhancing the visibility and reputation of the University, PAIR collaborates strategically with other pillars of PolyU. For example, PAIR works closely with the Research and Innovation Office to promote research development and enhance research capabilities, and joins forces with the Graduate School to promote excellence in Research Postgraduate education.

PAIR is the largest interdisciplinary research platform in Hong Kong and the Greater Bay Area. Our mission is, through advanced research and knowledge transfer activities, to develop PAIR into a world leader in providing interdisciplinary solutions to major societal challenges, for the benefit of humankind.

理大追求科研卓越，締造各種嶄新發明應對全球挑戰。我們通過交叉學科合作，發掘新知識，並將科研成果轉化成具影響力的方案，從而改善人類福祉、促進經濟效益、推動可持續發展、建設更美好的世界。

理大高等研究院（PAIR）是一個先進的研究平台，轄下設有多個研究院和研究中心，涵蓋多個具重要策略性意義的領域。我們拓展知識前沿，探索及研發用於應對全球關鍵挑戰的方案。我們高水平的研究人員來自世界各地，為科研企劃及項目帶來了豐富的成果和專業經驗。此外，我們世界一流的實驗室和先進研究設施，包括國家重點實驗室、中國國家工程研究中心（香港分部），以及校內其他優良研究設備，支持我們的科研人員積極探索創新，創造發明。

PAIR 是理大研究及創新發展的策略支柱之一。除了支持交叉學科研究、與世界頂尖學者合作，以及提高大學知名度和聲譽之外，PAIR 亦與其他理大內部單位進行戰略合作。例如，PAIR 與研究及創新事務處密切合作，推動科研發展和提高科研能力，以及與研究生院攜手促進研究生教育的卓越發展。

PAIR 是香港和大灣區內最具規模的交叉學科研究平台。我們的使命是透過一流的研究和知識轉移活動，發展 PAIR 成為重大社會挑戰提供交叉學科解決方案的世界領導者，造福人群。

Prof. CHEN Qingyan
Director of PolyU Academy for Interdisciplinary Research (PAIR)
Global STEM Scholar
Chair Professor of Building Thermal Science
陳清焰教授
香港理工大學高等研究院院長
傑出創科學人
建築熱科學講座教授

The world today is facing pressing challenges such as climate change, food safety, ageing population, energy shortage, sustainable development, etc. These grand problems cannot be solved by traditional discipline-specific research at universities. Instead, they require the joint efforts of interdisciplinary and diverse teams to bring about inventions and discoveries so that they can be addressed. At the same time, emerging technologies brought by the Fourth Industrial Revolution, such as Artificial Intelligence (AI), data science, Internet of Things (IoT), robotics, etc., are changing the way we live and work, presenting both challenges and opportunities.

As a university with a strong emphasis on societal impact, The Hong Kong Polytechnic University (PolyU) is inspired to address challenging problems in the world through advancing impactful interdisciplinary research and encouraging innovations. Interdisciplinary research as a mode of inquiry is one of the most productive and inspiring human pursuits to solve profound issues in the society, helping us to create a sustainable environment as well as healthier and more prosperous living. The new discoveries, technologies and innovations from interdisciplinary research can inspire young minds and deepen our understanding of the time and space which humanity is in.

At PolyU, faculty members, researchers, and graduate students are expanding knowledge and solving challenging problems through basic and applied interdisciplinary research. Our research integrates disciplines not only science, technology, engineering and mathematics, but also business, design, social science, humanities, management, etc.

The PolyU Academy for Interdisciplinary Research (PAIR) is a hub to facilitate interdisciplinary research, transfer technologies, inspire innovations, and international research collaborations. We aspire to harness the strengths of PolyU research and world-class scholars, to develop impactful interdisciplinary solutions for the greater good of society.

當今世界正面臨著氣候變化、食品安全、人口老化、能源短缺、可持續發展等迫切挑戰。這些重大問題難以通過大學傳統的單一學科研究來解決。反之，它們是需要交叉學科和多元團隊的共同努力，透過孕育發明和發現，才得以解決的。與此同時，第四次工業革命所帶來的新興技術，如人工智能（AI）、數據科學、物聯網（IoT）、機械人技術等，正在改變我們的生活和工作方式，帶來挑戰和機遇。

作為一所非常重視社會影響的大學，香港理工大學（理大）深受啟發，通過推進具影響力的交叉學科研究和鼓勵創新，解決世界面臨的重大挑戰。交叉學科研究作為一種探索模式，是人類為解決社會深層問題，而進行的最富成效和啟發性的追求之一，助我們創造可持續的環境，以及更健康、更繁榮的生活。交叉學科研究的新發現、技術和創新，可以激發年輕人的思維，加深我們了解人類所處的時空。

在理大，教職員、科研人員和研究生通過進行基礎和應用交叉學科研究，拓展知識，解決具有挑戰性的問題。我們的研究不僅結合了科學、技術、工程和數學，還有商業、設計、社會科學、 人文學、管理學等學科。

香港理工大學高等研究院（PAIR）是促進交叉學科研究、知識轉移、激發創新、國際科研合作的樞紐。我們期望運用理大科研和頂尖學者的優勢，開發具影響力的交叉學科方案，嘉惠社會。

# International Advisory Committee
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Member, National Academy of Engineering, USA
Foreign Member, Academia Europaea
Foreign Member, Chinese Academy of Sciences
Foreign Member, European Academy of Sciences and Arts

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Fellow, Singapore Academy of Engineering
Fellow, Singapore National Academy of Sciences
Fellow, Royal Society of Chemistry, UK
International Member, National Academy of Engineering

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新加坡工程院院士、新加坡國家科學院院士、英國皇家化學學會會士、美國國家工程院外籍院士

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Fellow, American Society of Heating, Refrigerating and Air-Conditioning Engineers
Fellow, International Society of Indoor Air Quality and Climate

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# Management Committee
# 管理委員會

## Chairman 主席

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Director of PolyU Academy for Interdisciplinary Research
Global STEM Scholar
Chair Professor of Building Thermal Science

陳清焰教授
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傑出創科學人
建築熱科學講座教授

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Chair Professor of Visual Computing

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Director of Research Institute for Land and Space
Chair Professor of Geomatics

丁曉利教授
土地及空間研究院院長
測繪及地理資訊學講座教授

Prof. TAO Xiaoming
Director of Research Institute for Intelligent Wearable Systems
Vincent and Lily Woo Professor in Textiles Technology
Chair Professor of Textile Technology

陶肖明教授
智能可穿戴系統研究院院長
吳文政及王月娥紡織科技教授
紡織技術講座教授

Ir Prof. WANG Shengwei
Director of Otto Poon Charitable Foundation Research Institute for Smart Energy
Otto Poon Charitable Foundation Professor in Smart Buildings
Chair Professor of Building Energy and Automation

王盛衛教授、工程師
潘樂陶慈善基金智慧能源研究院院長
潘樂陶慈善基金智能建築教授
建築能源與自動化講座教授

Prof. WONG Ka-hing
Director of Research Institute for Future Food
Professor, Department of Food Science and Nutrition

黃家興教授
未來食品研究院院長
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Prof. ZHANG Weixiong
Associate Director of PolyU Academy for Interdisciplinary Research
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Chair Professor of Systems Biology and Artificial Intelligence

章偉雄教授
香港理工大學高等研究院副院長
傑出創科學人
系統生物學與人工智能學講座教授

# Research Institute for Advanced Manufacturing
# 先進製造研究院

Director: Prof. George Q. HUANG
Chair Professor of Smart Manufacturing
院長：黃國全教授
智能製造講座教授

To be a hub for world-class manufacturing research and knowledge transfer to contribute to economic growth in a global context.

成為世界領先的先進製造研究和知識轉移中心，為全球經濟增長作出貢獻。

Advanced Processing and Materials Technologies
先進加工和材料技術

Digital Manufacturing
數字化製造

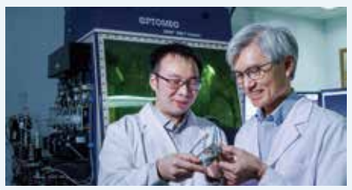

Manufacturing Systems and Instrumentation
製造系統和儀器


Manufacturing Operations and Logistics
製造運營和物流


Carbon Neutral Manufacturing
碳中和製造

**Impact case: High-performance titanium alloys**

The α–β Ti-O-Fe alloy, developed jointly by RIAM and overseas universities, is created using additive manufacturing methods that recycle off-grade titanium sponge into new strong and ductile titanium alloys. Findings have been published in *Nature*.



**成果案例：新型高強度鈦合金**

RIAM、理大及海外大學共同開發的「α—β Ti-O-Fe 合金」，利用增材製造，將劣質「海綿鈦」回收製成高強度、高塑性的新型鈦合金。研究結果已發表於《自然》期刊。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# Research Institute for Artificial Intelligence of Things
# 人工智能物聯網研究院

Director: Prof. CAO Jiannong
Otto Poon Charitable Foundation Professor in Data Science and
Chair Professor of Distributed and Mobile Computing
院長：曹建農教授
潘樂陶慈善基金數據科學教授及分佈式及移動計算講座教授

Be a world-leading institute in the next generation smart IoT empowered by AI, enabling smart connected societies with ground-breaking innovation, and contributing to sustainable urban development with energy-saving, operational efficiency, and improved quality of life.

成為人工智能物聯網的世界領先研究機構，以突破性創新科技改變智能互聯社會，實現更節能、更高效的城市可持續發展，提高生活質素。

AIoT Applications
智能物聯網應用

Cross-layer Issues
跨層問題

AIoT Infrastructure
智能物聯網基礎設施

AIoT System Platform
智能物聯網系統平台

AIoT Analytics
智能物聯網分析

**Impact case: Robot for autonomous in-pipe inspection**

PolyPi, an edge-AI-empowered robot developed by RIAIoT, enables autonomous in-pipe inspection in challenging environments and various pipe structures. The innovation won a Silver Medal at the 48th Geneva Inventions Expo.

**成果案例：管道檢測機械人**

RIAIoT 研發的「PolyPi」邊緣智能機械人系統，可於具挑戰性的環境和各種管道結構中，進行自動管道檢測。此技術獲第 48 屆日內瓦發明展銀獎。


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# Research Institute for Future Food
# 未來食品研究院

Director: Prof. WONG Ka-hing
Professor, Department of Food Science and Nutrition
院長：黃家興教授
食品科學及營養學系教授

To be a world-leading research institute that advances and transfers knowledge to address the key challenges in food science and human health.

成為世界領先的研究機構，通過知識推進及轉移，應對食品科學和人類健康方面的重大挑戰。

Food Sustainability
食物可持續發展

Smart Technology and Functional Food Development
智能科技及功能性食品研發

Nutrition and Human Health
營養及人類健康

**Impact case: Food waste-derived 3D printing material**

The novel 3D printable material, developed from coffee grounds and tea leaves, is compatible with Fused Deposition Modelling (FDM) 3D printers, allowing for production of modular furniture and display items. The innovation won a Bronze Medal at the 48th Geneva Inventions Expo.

**成果案例：食物廢料衍生 3D 打印複合材料**

RiFood 研發一種由咖啡渣和茶葉渣衍生而成的新型 3D 列印材料，可應用於熔融沉積成型 3D 打印機，適合生產模塊化傢俱和展示商品。此技術獲第 48 屆日內瓦發明展銅獎。

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# Research Institute for Intelligent Wearable Systems
# 智能可穿戴系統研究院

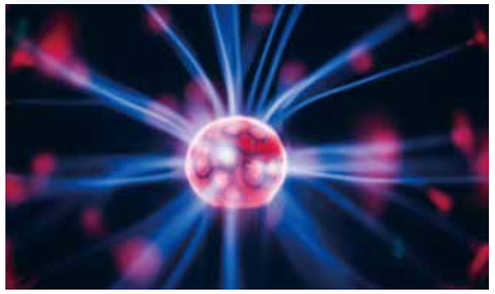
Director: Prof. TAO Xiaoming
Vincent and Lily Woo Professor in Textile Technology and Chair Professor of Textile Technology
院長：陶肖明教授
吳文政及王月娥紡織科技教授及紡織技術講座教授

To be a leading research institute in intelligent wearable systems via research, global academic and industrial collaboration, knowledge transfer and talent development.

成為領先的智能可穿戴系統研究機構，積極推動研究、全球學術和產業合作、知識轉移及人才培育。

System Integration and Evaluation
系統集成與評估

IWEAR System Applications
智能可穿戴系統應用研究



Fibre-based and Flexible Devices
纖維基柔性器件

**Impact case: Safe and eco-friendly antimicrobial materials with high efficiency**

The novel polyhydroxyalkanoate (PHA) materials developed by RI-IWEAR are fully biodegradable, transparent, non-toxic and non-allergic, and have excellent wide-spectrum antimicrobial properties. The innovation was awarded a Gold Medal at the 48th Geneva Inventions Expo.


**成果案例：安全環保高效抗菌材料**

RI-IWEAR 研發的「新型聚羥基脂肪酸酯」材料完全可生物降解，而且透明、無毒、不過敏，並具有優異的廣譜殺菌性能。此技術獲第 48 屆日內瓦發明展金獎。

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# Research Institute for Land and Space
# 土地及空間研究院

Director: Prof. DING Xiaoli
Chair Professor of Geomatics
院長：丁曉利教授
測繪及地理資訊學講座教授

To be a world-class research institute in providing innovative solutions for economical and eco-friendly land and space development.

成為世界級研究院，為經濟、環保土地和空間發展提供創新方案。

Land Reclamation
填海

Innovative Land and Space Solutions
土地和空間發展創新方案

Land Analytics and Management
土地分析和管理

Land Economics and Planning
土地經濟與規劃

Environmental Treatment and Impacts
環境處理和影響

**Impact case: Innovative and eco-friendly land reclamation technique using dredged sediments and industrial wastes**

RILS developed an innovative, low-carbon reclamation method using dredged seabed sediments and industrial wastes as fill materials. By incorporating a combined ground improvement technique using prefabricated horizontal and vertical drain, this method effectively reduces the reclamation cost by over 90%, while accelerating the reclamation process at least fivefold.

**成果案例：利用疏浚沉積物和工業廢棄物的創新環保填海技術**

RILS 研發了一種創新、低碳的填海方法。該方法使用疏浚獲取的海底沉積物及工業廢物作為填海材料，採用預製水平和垂直排水板處理軟土，降低超過 90% 的填海成本，同時加快填海過程五倍以上。


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# Photonics Research Institute
# 光子技術研究院

Director: Prof. LU Chao
Chair Professor of Fiber Optics
院長：呂超教授
光纖光學講座教授

To be a world-leading institute in advancing the fundamental knowledge of photonics and its applications in various science and engineering disciplines.

成為推進光子學基本理論研究及其於各種科學及工程領域應用的全球領先機構。

Photonic Sensing
光子傳感

Photonic Materials and Fundamental Science
光子材料與基礎科學

Photonic Devices
光子器件

Photonics and Information Communications Technology
光子學和信息通訊技術

Laser Spectroscopy
激光光譜

**Impact case: Nanoscale ferroelectric new materials**

PRI discovered that bilayer stacks of molybdenum disulphide ($MoS_2$) and tungsten disulphide ($WS_2$) produced at the nanometre scale show an intrinsic ferroelectric property, making them promising materials for electronics manufacturing at low cost and with low energy consumption.

**成果案例：納米級鐵電新材料**

PRI 發現由二硫化鉬（$MoS_2$）和二硫化鎢（$WS_2$）合組的雙層堆疊，展現其固有的鐵電性。此材料有助於推動電子業的低成本、低耗能製造。


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# Research Institute for Quantum Technology
# 量子技術研究院

Director: Prof. LIU Ai-Qun
Chair Professor of Quantum Engineering and Science
院長：劉愛群教授
量子工程與科學講座教授

To drive advancements in quantum technology through innovative research and interdisciplinary collaboration.

致力於量子科研創新及交叉學科研究，推動量子技術發展。


Quantum Computing
量子計算

Quantum Communication
量子通訊

Quantum Metrology and Sensing
量子計量與傳感

Quantum Machine Learning
量子機器學習

Quantum Algorithms
量子演算法

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# Research Institute for Smart Ageing
# 智齡研究院

Director: Ir Prof. ZHENG Yongping
Henry G. Leong Professor in Biomedical Engineering and
Chair Professor of Biomedical Engineering
院長：鄭永平教授、工程師
梁顯利生物醫學工程教授及生物醫學工程講座教授

Be a leading research institute that advances and transfers knowledge and technologies for smart ageing.

成為推進及轉移智齡知識與科技的領先研究機構。

Smart Health
智能健康

Smart Intelligence
智能認知

Smart Society
智能社會


Smart Environment
智能環境

Gerontechnology
智齡科技

**Impact case: Liverscan**

Liverscan, a portable non-invasive system developed by RISA, uses real-time ultrasound imaging to perform liver fibrosis assessment. The technology is being trialled at hospitals and medical examination centres, and a global launch is expected in 2026.

**成果案例：Liverscan**

RISA 研發的 Liverscan 便攜式無創系統，利用實時超聲波影像，進行肝纖維化檢測。此技術已於多家醫院和體檢中心落地試用，預計於 2026 年全球推出。

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Director: Prof. John Wen-zhong SHI
Otto Poon Charitable Foundation Professor in Urban Informatics and
Chair Professor of Geographical Information Science and Remote Sensing
院長：史文中教授
潘樂陶慈善基金城市信息學教授及地理資訊系統及遙感講座教授

Be an international centre of excellence in urban informatics and a living laboratory of smart city development for Hong Kong and the Guangdong-Hong Kong-Macao Greater Bay Area (GBA).

成為城市資訊學領域的國際卓越研究中心，以及香港和粵港澳大灣區智慧城市建設的生活實驗室。

Smart Positioning and Navigation
智能定位與導航

Connected Environment for Urban Mobility
城市交通的互聯環境

High-Definition Map for Autonomous Driving
自動駕駛與高精度地圖

Smart Environment
智慧環境

Data Science for Smart Cities
智慧城市與數據科學

Smart Living
智慧生活

Smart Government
智慧政府

Smart Economy
智慧經濟

Ageing Mobility Analytics
老齡化出行分析

**Impact case: Advanced real-time prediction and early warning system for the spread of emerging pathogens**

The warning system developed by SCRI successfully tracked different SARS-CoV-2 variants and supported COVID-19 control measures around the world. The innovation won a Gold Medal at the 48th Geneva Inventions Expo and was widely reported in global media about a hundred times. The World Health Organization highly commended the research reports based on this system.

**成果案例：新發病原體傳播的先進即時監測及早期預警系統**

SCRI 研發的預警系統，成功追蹤了新型冠狀病毒不同變種的傳播，並支援了全球各地的新型冠狀病毒病管控措施。系統獲第 48 屆日內瓦發明展金獎，及全球媒體報導約百次。基於本系統的研究報告獲得世界衛生組織的高度評價。

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Director: Ir Prof. WANG Shengwei
Otto Poon Charitable Foundation Professor in Smart Buildings and
Chair Professor of Building Energy and Automation
院長：王盛衛教授、工程師
潘樂陶慈善基金智能建築教授及建築能源與自動化講座教授

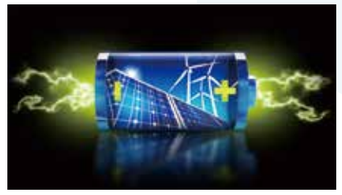
To be a world-leading energy research institute in developing technologies and solutions for energy innovation, energy sustainability and carbon-neutrality.

成為世界領先的能源研究機構，開發能源創新、能源可持續發展，及碳中和技術和方案。

District Energy Systems and Smart Grid
區域能源系統和智能電網

Advanced and Renewable Energy Conversion Technologies
先進及可再生能源轉換技術

Smart Buildings and Smart Energy Systems
智慧建築和智慧能源系統



Advanced Energy Storage Technologies
先進儲能技術

Advanced Energy Materials
先進能源材料

**Impact case: Novel technique boosts power-conversion efficiency of organic solar cells**

The novel approach developed by RISE to regulate the morphology of organic solar cells (OSCs) for boosting the efficiency and stability of OSCs, achieved a breakthrough power conversion efficiency of 19.31% in binary OSCs.

**成果案例：嶄新技術提升有機太陽能電池的能量轉換效率**

RISE發明的嶄新有機太陽能電池（OSC）形貌調控技術，提高了 OSC 的效率和穩定性，更在首次的二元 OSC 中成功提高功率轉換效率至 19.31%，創下紀錄新高。

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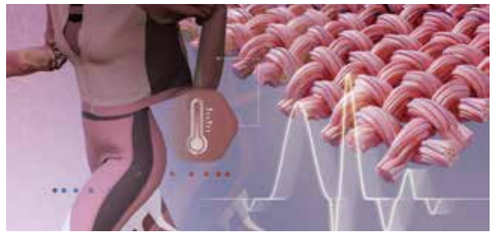
# Research Institute for Sports Science and Technology
# 體育科技研究院

Director: Ir Prof. ZHANG Ming
Chair Professor of Biomechanics
院長：張明教授、工程師
生物醫學工程講座教授

RISports 體育科技研究院

To provide scientific and novel engineering solutions in sports, making sports more interesting, more rewarding, and safer for everyone.

開發科學、嶄新的體育工程技術方案，賦予運動更多趣味、效益和安全。



Sports Product Design, Materials and Manufacturing
體育產品設計、材料及生產技術

Sports Training and Rehabilitation
運動訓練與康復治療

Sports Biomechanics and Human-Product Interaction
運動生物力學及人體與產品的相互作用

Sports Measurement, Feedback and Instrumentation
運動測量、反饋及儀器配置

**Impact case: Extensive research collaborations for driving sports development**

RISports collaborates with top sports brands (e.g., Li Ning, Dr Kong, Asics), sports organisations (e.g., Samaranch Foundation, Hong Kong Sports Institute), and medallists in the Olympics and National Games to advance sports science and technology.

**成果案例：廣泛科研合作推動體育發展**

RISports 與頂級運動品牌（如：李寧、江博士、亞瑟士）、體育組織（如：薩馬蘭奇基金會、香港體育學院），及奧運和全運會獎牌得主合作，推動運動科技發展。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# Research Institute for Sustainable Urban Development
# 可持續城市發展研究院

Director: Prof. LI Xiangdong
Ko Jan Ming Professor in Sustainable Urban Development and
Chair Professor of Environmental Science and Technology
院長：李向東教授
高贊明可持續城市發展教授及環境科學與科技講座教授

RISUD

To be a world-leading research institute in the development and application of innovative solutions for sustainable high-density urban development.

成為開發及應用可持續高密度城市發展方案的領先研究機構。

Urban Carbon Neutrality
城市碳中和

Urban Infrastructure
城市基建

Urban Environment
城市環境

**Impact case: First atlas of global airborne bacteria**

RISUD established the first atlas of global airborne bacteria after nearly ten years of efforts, revealing the effect of human and animal activities on the composition of airborne bacterial communities.

**成果案例：首份全球空氣細菌圖譜**

RISUD 花近十年時間編製首份全球空氣微生物圖譜，揭示了人類和動物活動對自然環境空氣中微生物群落結構的影響。


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# Research Centre for Chinese Medicine Innovation
# 中醫藥創新研究中心

Director: Prof. WONG Man-sau
Professor, Department of Food Science and Nutrition
主任：黃文秀教授
食品科學及營養學系教授

To become a leading institute for the research and application of Chinese Medicine (CM) treatment and practices for the improvement of the people's health and well-being.

成為領先的中醫藥研究中心，研究及應用中醫藥治療與實踐，改善人們的身心健康。


Metabolic Syndrome and Liver Diseases
代謝綜合症與肝疾病管理

Women's Health
女性健康

Mechanistic Studies on Chinese Herbal Medicines and New Drug Development
中藥機理研究及新藥開發

Integrative Solution for Physical Wellness
體能健康綜合保健方案

**Impact case: Advocating university-industry collaboration for Chinese medicine development**

RCMI published a Policy Paper on University-Industry Collaboration for Chinese Medicine (CM) Innovation in the Greater Bay Area (GBA), providing specific recommendations to policymakers to drive the research and development, internationalisation, commercialisation, and innovation of CM in the GBA.

**成果案例：中醫藥產學研合作倡議**

RCMI 發表的《粵港澳大灣區中醫藥產學研合作創新政策文件》，向政府提供建議，促進大灣區中醫藥科研、國際化、產品商業化及創新。

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# Research Centre for Deep Space Explorations
# 深空探測研究中心

Director: Ir Prof. YUNG Kai-leung
Sir Sze-yuen Chung Professor in Precision Engineering and Chair Professor of Precision Engineering
主任：容啟亮教授、工程師
鍾士元爵士精密工程教授及精密工程講座教授

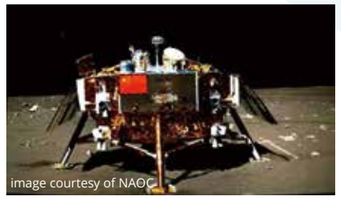
To be a leading research centre of interdisciplinary collaborative research in the exploration and exploitation of space resources and associated technologies, with the ultimate aim of technology transfer for the earthly benefits of Hong Kong, the Nation and the world.

成為探測及開發太空資源及相關技術的領先交叉學科合作研究中心，透過技術轉移，造福香港、國家和全世界。


Planetary Remote Sensing and Mapping for Landing Site Selection
用於著陸點選擇的行星遙感和測繪

Planetary Resource and Microbes
行星資源及微生物

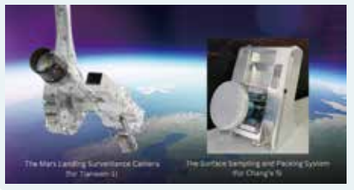
Planetary Base Construction and Geotechnical Mechanics
行星基地建設和岩土力學




Space Environment and Payload Research
太空環境和載荷研究

**Impact case: Contributing to Nation's space achievements**

The space instruments and technologies developed by RCDSE were used in national space missions. They include: "Surface Sampling and Packing System" for collecting lunar samples in the Chang'e-5 mission, as well as "Mars Landing Surveillance Camera" for capturing images of Mars, and the "Topographic and Geomorphological Characterisation and Analysis Technique" for identifying possible landing sites in the Tianwen-1 mission.



**成果案例：貢獻國家航天事業**

RCDSE 研發的太空儀器和技術，獲應用於國家航天任務。其中包括：用於「嫦娥五號」月壤樣本採集任務的「表取採樣執行裝置」，以及用於「天問一號」任務中拍攝火星影像的「落火狀態監視相機」，和識別可能着陸點的「地形測量及地貌分析技術」。

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# Research Centre for Digital Transformation of Tourism
# 旅遊業數字化轉型研究中心

Director: Prof. SONG Haiyan
Associate Dean of the School of Hotel and Tourism Management,
Mr and Mrs Chan Chak Fu Professor in International Tourism and
Chair Professor of Tourism
主任：宋海岩教授
酒店及旅遊業管理學院副院長兼講座教授及陳澤富伉儷國際旅遊教授

Co-Director: Prof LI Qing
Head of Department of Computing and
Chair Professor of Data Science
聯合主任：李青教授
電子計算學系系主任兼數據科學講座教授

To digitally transform the tourism industry by developing AI-driven decision and monitoring systems, and innovative experience solutions to reshape tourism and hospitality operations, destination governance, and international collaboration to promote sustainable travel experiences and business practices.

透過開發人工智慧驅動的決策和監控系統，以及創新體驗解決方案，實現旅遊業的數位轉型，重塑旅遊和酒店業業務運營、目的地治理和國際合作，以促進可持續的旅遊體驗和商務活動。

Digital Monitoring System for Tourism and Hospitality
旅遊和酒店業數位監控系統


AI-Driven Business and Experience Innovations
人工智慧驅動的業務和創新體驗

**Impact case: Tourism demand forcasting**

RCDTT integrates economics, tourism management and computer science in developing valuable tools for the forecasting of tourism demand. The Centre has developed first self-adaptive platform for tourism demand forecasts across the Greater Bay Area, and collaborated with the Pacific Asia Travel Association (PATA) in producing the Asia Pacific Visitor Forecasts reports.

**成果案例：旅遊需求預測**

RCTFF 結合經濟學、旅遊管理和電腦科學，研發用於預測旅遊需求的重要工具。中心開發了首個大灣區旅遊需求預測平台，並與亞太旅遊協會合作製作《亞太地區訪客預測》報告。

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# Mental Health Research Centre
# 精神健康研究中心

Director: Prof. QIU Anqi
Professor, Department of Health Technology and Informatics
主任：仇安琪教授
醫療科技及資訊學系教授

To become a leading centre for research in mental health and promotion of mental well-being.

成為領先的精神健康研究和促進心理健康的中心。

Basic and Translational Neuroscience of Mental Health
基礎腦神經科學及轉化

Neuroimaging Studies and Innovative Cognitive Rehabilitation of Mental Disorders
精神障礙的神經影像學研究與創新的認知康復

Behavioural and Psychiatric Rehabilitation
行為和精神康復


Psychosocial and Cultural Aspects of Mental Health
社會心理和文化對精神健康的影響


Service Use and Social Policy of Mental Health
精神健康服務與社會政策

**Impact case: ReST Hub for improving mental health at universities**

ReST Hub (Resilient Students Training Hub) is a five-year mental health initiative led by MHRC, which turn university campuses across Hong Kong and Asia into mental health promotive ecosystems through services, training, and community engagement events.

**成果案例：「心理彈跳站」**

MHRC 推行為期五年的「心理彈跳站」項目。透過服務、培訓和社區活動，在香港和亞洲的大學校園建立促進心理健康的生態圈。

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# Research Centre for Resources Engineering towards Carbon Neutrality
# 碳中和資源工程研究中心

Director: Ir Prof. POON Chi-sun
Michael Anson Professor in Civil Engineering and
Chair Professor of Sustainable Construction Materials
主任：潘智生教授、工程師
安禮信土木工程教授及環保建材講座教授

To become a forefront international research centre on solid waste recycling issues.

成為國際前沿的固體廢物回收研究中心。


Environmental and Economic Impact
環境和經濟影響

Recycling and Sustainable Construction
回收及可持續建築


Policy and Society
政策與社會

Waste Valorization Technology
廢物增值技術

**Impact case: Eco-Blocks**

Eco-Blocks are green concrete materials developed by RCRE using construction, demolition, and other discarded waste. The technology is now in its fifth generation of development, and different generations of Eco-Blocks have been used in PolyU buildings.

**成果案例：「環保再造磚」**

RCRE 研發的「環保再造磚」是一款綠色混凝土，由建築裝修、翻新拆卸及其他工程所產生的建築廢料而製成。此技術目前處於第五代研發階段。過往多代的「環保再造磚」已應用於理大校園的建設中。

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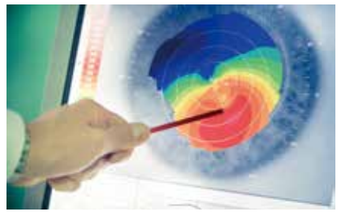
# Research Centre for SHARP Vision
# 視覺科學研究中心

Director: Prof. HE Mingguang
Henry G. Leong Professor in Elderly Vision Health and
Chair Professor of Experimental Ophthalmology
主任：何明光教授
梁顯利長者健康視覺教授及科研眼科講座教授

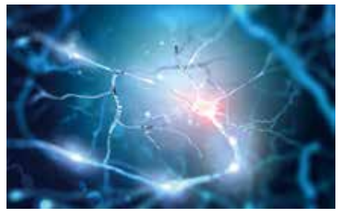
To be a world leader in the creation of knowledge and solutions for the promotion of healthy life-long sharp vision.

透過創造知識和解決方案，協助人類維持長久、健康而敏銳的視覺，成為世界領先的研究中心。



Shape Bioengineer
生物塑形工程

Augmentation Therapy
擴增療法



Regeneration Neurovision
神經視覺復元

Health Process
健康發展進程

Patient Care
全人護理

**Impact case: NMDIS lens**

The Nano Multi-ring Defocus Incorporated Spectacle (NMDIS) lens, jointly developed by RCSV researchers and PolyU units, combines two of PolyU's proprietary technologies and can slow down myopia progression in children and adolescents. This innovation was awarded the Prize of the State of Geneva and a Gold Medal with Congratulations of the Jury at the 48th Geneva Inventions Expo.

**成果案例：新型高效「納米多環離焦」近視防控鏡片**

RCSV 與理大單位共同研發的「納米多環離焦」近視防控鏡片，結合了理大雙專利技術，能減慢兒童及青少年的近視問題。此技術獲第 48 屆日內瓦發明展「日內瓦州特別大獎」以及評審團嘉許金獎。

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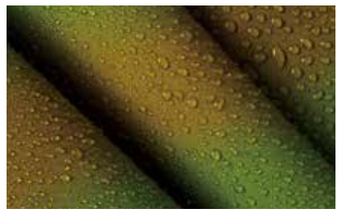
# Research Centre of Textiles for Future Fashion
# 未來服裝紡織科技研究中心

Director: Prof. FAN Jintu
Lee family Professor in Textiles Technology and
Chair Professor of Fiber Science and Apparel Engineering
主任：范金土教授
李氏紡織科技教授及纖維科學與服裝工程講座教授

To be a world leading research institute that synergises interdisciplinary R&D strength in materials, design, digital technologies and management to address real world challenge of textiles and fashion for health, wellbeing, protection, performance and sustainability.

成為世界領先的研究機構，結合材料科學、設計、數位技術、管理學的交叉學科科研實力，應對當今紡織及時裝在人類健康、福祉、機能保護、性能提升，及可持續發展方面的挑戰。

Fashion & Textile Product Design and Innovation
時裝及紡織產品設計與創新



Advanced Fashion & Textile Materials and Technologies
先進時裝與紡織材料及技術

Fashion and Textile Life Cycle Management
時裝及紡織生命週期管理

**Impact case: iActive™ intelligent activewear**

The iActive developed by RCTFF is an intelligent activewear designed for sweat management. It uses low-voltage-driven artificial “sweat glands” created by skin-like anti-heat textile fabrics and a root-like branching liquid transport system that aligns with the body’s sweat map, for actively and programmably transporting sweat to a perspiration dissipater at the lower region of the sportswear, and quickly removing it as liquid droplets. Users can wirelessly adjust the sweat level of iActive™ through a mobile app.

**成果案例：智能運動服「iActive™」**

RCTFF 研發的「iActive™」是一款智能排汗運動服。它採用了低壓電控的仿皮膚抗熱紡織面料作為「人造汗腺」排汗器，及對應人體背部主要出汗位置，內置根狀汗液收集系統，主動且可控地將汗水猶如樹根傳輸水分般傳輸到衣服底部的排汗器，並以液滴的形式迅速將汗水排掉。用家可透過手機應用程式，自主控制運動服的排汗速度。

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