



THE HONG KONG  
POLYTECHNIC UNIVERSITY  
香港理工大學



PolyU Academy for  
Interdisciplinary Research  
香港理工大學高等研究院



## PAIR CONFERENCE 2023 理大高等研究院大會

# RESEARCH EXCELLENCE FOR SOCIETAL IMPACTS

## 8 - 11 May 2023

### Conference Programme



Platinum Sponsor :

**Otto Poon Charitable Foundation**

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*\*Conference Programme as of 1 May 2023. Provisional programme details may be subject to change without prior notice.*

## Welcome Message

It gives me distinct pleasure to welcome you all to the first Conference hosted by the **PolyU Academy for Interdisciplinary Research (PAIR)** at The Hong Kong Polytechnic University (PolyU). PAIR is a central research platform at PolyU dedicated to providing world-leading interdisciplinary solutions to significant societal challenges.

The four-day PAIR Conference, under the general theme of “**Research Excellence for Societal Impacts**”, could be the first and largest event in 2023 dedicated to interdisciplinary research and development in Hong Kong higher education. It provides a platform for professional exchange and closer collaboration among stakeholders from industry, academia, and governments around the world to build the capacities in science, technology, innovation, and research for the growth of Hong Kong and beyond.

As a university with a strong emphasis on societal impact, PolyU is inspired, more than ever, to bring practical innovation for a more sustainable tomorrow. The call to be innovative, interdisciplinary, and agile is surely a clue to a better future for all.

The PAIR Conference provides a platform for professional exchange on interdisciplinary research and development among stakeholders from academia, industry, and governments around the world. Under the theme of “**Research Excellence for Societal Impacts**”, internationally renowned scholars and academics from and outside PolyU can share their insights, present

research results, and engage in meaningful exchange with academics, industrial and service partners, and government officials and administrators.

The Conference is therefore important for us to understand what it means to be innovative, interdisciplinary, and agile. It is a major step towards closer interinstitutional and cross-sectoral collaboration to embrace the challenges ahead.

The four-day conference brings together more than 200 presenters delivering their research results in the plenary, keynote, technical, and poster sessions. The Conference covers 14 themes related to the research institutes and centres under PAIR. The laboratory visits and social occasions at the Conference surely expand your understanding about PolyU's cutting-edge technology and equipment, as well as your professional network.

I wish you a memorable experience in the Conference and a pleasant stay in Hong Kong.



CHEN Qingyan “Yan”  
Convenor of the PAIR Conference  
Director of PolyU Academy for  
Interdisciplinary Research (PAIR)



## Conference Objectives

- To promote the pivotal role of PAIR and research institutes and research centres in contributing to interdisciplinary research and solutions to significant societal challenges.
- To enhance communication with government, industries, professional bodies, and other stakeholders in Hong Kong, the Greater Bay Area, and beyond.
- To inject innovation and inspiration into the R&D sector and raise the professional quality and standards of research and technological development.
- To foster collaborations between academia, industry, businesses, and government.
- To enhance the academic exchange of PolyU with reputable institutions around the world in strategic focus areas through impactful collaborative activities in research and scholarship.

# Conference Committees

## Scientific Committee

### Chairman

Ir Prof. Christopher CHAO

Vice President (Research and Innovation)

### Members *(in alphabetical order of surnames)*

Prof. CAO Jiannong

Director of Research Institute for Artificial  
Intelligence of Things

Prof. CHEN Qingyan

Director of PolyU Academy for  
Interdisciplinary Research

Prof. DING Xiaoli

Director of Research Institute for Land and  
Space

Prof. JIN Wei

Acting Director of Photonics Research Institute

Prof. KEE Chea-su

Interim Director of Research Centre for SHARP  
Vision

Prof. LI Li

Associate Director of PolyU Academy for  
Interdisciplinary Research

Ir Prof. MAN Hau-chung

Director of Research Institute for Advanced  
Manufacturing

Prof. David MAN  
Former Director of Mental Health Research  
Centre

Ir Prof. POON Chi-sun  
Director of Research Centre for Resources  
Engineering towards Carbon Neutrality

Prof. John SHI Wenzhong  
Director of Otto Poon Charitable Foundation  
Smart Cities Research Institute

Prof. TAO Xiaoming  
Director of Research Institute for Intelligent  
Wearable Systems

Prof. Hector TSANG Wing-hong  
Interim Director of Mental Health Research  
Centre

Ir Prof. WANG Shengwei  
Director of Otto Poon Charitable Foundation  
Research Institute for Smart Energy

Prof. WONG Man-sau  
Director of Research Centre for Chinese  
Medicine Innovation

Prof. Jerry YAN Jinyue  
Editor-in-Chief of Nexus Journal

Ir Prof. YUNG Kai-leung, BBS  
Director of Research Centre for Deep Space  
Explorations

Ir Prof. ZHANG Ming  
Director of Research Institute for Sports  
Science and Technology

Ir Prof. ZHENG Yongping  
Director of Research Institute for Smart  
Ageing

## Organising Committee

*(in alphabetical order of surnames)*

Ms Ceci CHAN  
Executive Assistant

Mr Terry HO  
Assistant Technical Officer

Ms Connie CHAN  
Executive Officer

Ms Cathy KWOK  
Assistant Officer

Ms Florence CHAN  
Senior Executive Officer

Ms Etta LAI  
Executive Officer

Ms Jenny CHAN  
Assistant Officer

Ms Sandy LAU  
Research Student

Ms CHEN Shan  
PhD Student

Ms Cheryl LI  
Assistant Officer

Ms Chrissy CHENG  
Assistant Officer

Ms LI Ying  
Assistant Officer

Ms Sherri CHENG  
Assistant Officer

Ms Fanny NG  
Executive Officer

Ms Sara CHEUK  
Executive Officer

Ms Shirley NG  
Executive Assistant

Ms Mavis FAN  
Technical Writer

Mr Frankie NG  
Assistant Officer

Ms Kate FUNG  
Assistant Officer

Dr Karen TAM  
Assistant Officer

Mr Jason HO  
Executive Officer

Ms Justine TANG  
Project Associate

Ms Eva TSANG  
Executive Officer

Ms Wendy TSUI  
Executive Assistant

Ms WANG Feng  
PhD Student

Ms Lyn WONG  
Assistant Officer

Ms Stella WONG  
Assistant Officer

Dr Alice YAU  
Research Fellow

Ms Carol YAU  
Executive Assistant

Ms Vivien YAU  
Assistant Officer

Ms Mandy YEUNG  
Executive Officer

## General Information

### Emergency Contacts

#### PAIR Conference Secretariat

Location:	Room HJ 203 Podium level, Stanley Ho Building The Hong Kong Polytechnic University
Telephone:	+852 3400 3036
Email:	<a href="mailto:ac.pair@polyu.edu.hk">ac.pair@polyu.edu.hk</a>

#### Contacts at PAIR Constituent Research Units

Research Institute for Advanced  
Manufacturing (RIAM)

Ms Cheryl LI

Tel: +852 2766 6321

Email: [riam.enquiry@polyu.edu.hk](mailto:riam.enquiry@polyu.edu.hk)

Research Institute for Artificial Intelligence of  
Things (RIAIoT)

Mr Frankie NG

Tel: +852 2766 7319

Email: [frankie526.ng@polyu.edu.hk](mailto:frankie526.ng@polyu.edu.hk)

Research Institute for Intelligent Wearable  
Systems (RI-IWEAR)

Ms LI Ying

Tel: +852 2766 6485

Email: [tcleeko@polyu.edu.hk](mailto:tcleeko@polyu.edu.hk)

Research Institute for Land and Space (RILS)  
Ms Cathy KWOK  
Tel: +852 2766 5966  
Email: [info.rils@polyu.edu.hk](mailto:info.rils@polyu.edu.hk)

Photonics Research Institute (PRI)  
Ms Chrissy CHENG  
Tel: +852 2766 6222  
Email: [info.pri@polyu.edu.hk](mailto:info.pri@polyu.edu.hk)

Research Institute for Smart Ageing (RISA)  
Ms Lyn WONG  
Tel: +852 3400 3530  
Email: [info.risa@polyu.edu.hk](mailto:info.risa@polyu.edu.hk)

Otto Poon Charitable Foundation Smart Cities  
Research Institute (SCRI)  
Ms Stella WONG  
Tel: +852 3400 3872  
Email: [info.scri@polyu.edu.hk](mailto:info.scri@polyu.edu.hk)

Otto Poon Charitable Foundation Research  
Institute for Smart Energy (RISE)  
Ms Kate FUNG  
Tel: +852 3400 3037  
Email: [info.rise@polyu.edu.hk](mailto:info.rise@polyu.edu.hk)

Research Institute for Sports Science and  
Technology (RISports)  
Ms Jenny CHAN  
Tel: +852 2766 7684  
Email: [ri.sports@polyu.edu.hk](mailto:ri.sports@polyu.edu.hk)

Research Centre for Deep Space Explorations  
(RCDSE)  
Ms Wendy TSUI  
Tel: +852 2766 7427  
Email: [wai-chi.tsui@polyu.edu.hk](mailto:wai-chi.tsui@polyu.edu.hk)



Mental Health Research Centre (MHRC)

Ms Carol YAU

Tel: +852 2766 4445

Email: [mh.rc@polyu.edu.hk](mailto:mh.rc@polyu.edu.hk)

Research Centre for Chinese Medicine Innovation  
(RCMI)

Ms Ceci CHAN

Tel: +852 3400 3879

Email: [info.rcmi@polyu.edu.hk](mailto:info.rcmi@polyu.edu.hk)

Research Centre for Resources Engineering  
towards Carbon Neutrality (RCRE)

Dr Karen TAM

Tel: +852 2766 4472

Email: [info.rcre@polyu.edu.hk](mailto:info.rcre@polyu.edu.hk)

Research Centre for SHARP Vision (RCSV)

Ms Shirley NG

Tel: +852 3400 2312

Email: [info.rcsv@polyu.edu.hk](mailto:info.rcsv@polyu.edu.hk)

## Useful Phone Numbers

Emergency Services (police, fire, ambulance)	999
Police Hotline	+852 2527 7177
Travel Industry Authority	+852 3698 5900
Consumer Council	+852 2929 2222
Hong Kong Tourism Board Visitor Hotline	+852 2508 1234
Hong Kong International Airport	+852 2181 8888
Customs and Excise Department 24-Hour Hotline	+852 2815 7711

Hong Kong Immigration Department	+852 2824 6111
Hongkong Post	+852 2921 2222
Department of Health	+852 2961 8989
Hong Kong Observatory (for weather information)	+852 1878 200
Telephone Directory Enquiries	+852 1081

## Preparing Travel to Hong Kong

### Visa

Nationals of about 170 countries and territories may visit Hong Kong without a visa/entry permit for a period ranging from 7 days to 180 days. For more information on visa/entry permit requirements for visitors to the HKSAR, please refer to the website of the Immigration Department [www.immd.gov.hk](http://www.immd.gov.hk).

### Insurance

The organiser does not accept responsibility for accidents that might occur. Participants are strongly encouraged to arrange travel insurance prior to their departure from their home countries. An insurance plan covering accidental loss of belongs, medical costs of injury and illness, and other possible risks related to international travel are recommended.

### Latest Updates for Inbound Travellers

Please refer to the HKSAR announcements [www.info.gov.hk/gia/general/today.htm](http://www.info.gov.hk/gia/general/today.htm) and COVID-19 Thematic Website [www.coronavirus.gov.hk](http://www.coronavirus.gov.hk) for the latest arrangements for inbound travellers.

## Currency

The legal tender in Hong Kong is the Hong Kong dollar (HKD), which is pegged to the US dollar at a rate of about HKD 7.80 to USD 1, although exchange rates may fluctuate slightly.

Foreign currencies can be exchanged at airports, banks, hotels and currency exchange stores. All major credit cards are widely accepted in Hong Kong.

## Time Zone

Local Hong Kong time is Greenwich Mean Time +8 hours.

## Power and Electricity

The standard electrical voltage in Hong Kong is 220 volts AC, 50Hz (British three-pin rectangular blade plug).

## Lost Passport

To make a “lost report”, please approach the nearest police station and/or call the Police Hotline (+852 2527 7177) for further information, and contact your consulate to have your passport replaced.

## Lost or Stolen Wallet

If your wallet or valuables are lost during the Conference, please notify the PAIR Conference Secretariat immediately. For wallet or valuables lost outside PolyU campus, please notify your hotel immediately and report the theft to police.

# Hong Kong Local Transportation

## Octopus Card

The Octopus card is a multi-usage smart card charging for the public transportation in Hong Kong, making it easy to enjoy Hong Kong's public transportation system. You can loan an Octopus at any MTR customer service centre with a refundable deposit of HK\$50. Please refer to the MTR Octopus Card website

[www.mtr.com.hk/en/customer/tickets/about\\_octopus.html](http://www.mtr.com.hk/en/customer/tickets/about_octopus.html) for details.

## Conference Venue

The Hong Kong Polytechnic University (PolyU) is located at the centre of Kowloon Peninsula. The venue is nearby and is easily accessible via various transportation.

**By MTR:** The nearest MTR station is Hung Hom Station and a footbridge at Exit A1 or D1 leads you to the campus.

**By Bus:** Two major bus stops around campus are Hung Hom Station and Cross Harbour Tunnel Toll Plaza (Kowloon side).

**By Taxi:** Three types of taxis are operating in Hong Kong: Urban red taxi, New Territories green taxi, and Lantau Island blue taxi. All three types of taxis serve Hong Kong International Airport, but only urban red taxis go to PolyU. Additional charges occur for large baggage. The tunnel tolls are both payable by a passenger for cross-harbour hiring.

## **From the Airport to PolyU**

**By Train:** Take Airport Express from Hong Kong International Airport to Kowloon Station. Then take taxi to PolyU. This is cheaper than taking directly taxi from the airport to PolyU.

**By Bus:** The cheapest is to take Cityflyer route A21 from Airport (Ground Transportation Centre) Bus Terminus to Hung Hom Station. Take the footbridge at Hung Hom Station Exit D1 or A1 that leads you to the campus. It takes around 75 mins for the ride and costs HK\$33.

## **From Inland China and Macau to PolyU**

**By High Speed Rail:** The High Speed Rail (Hong Kong Section) runs from Hong Kong West Kowloon Station, connecting Hong Kong with Inland China's national high-speed rail network. Please refer to the MTR High Speed Rail website [www.highspeed.mtr.com.hk](http://www.highspeed.mtr.com.hk) for details.

**Via Hong Kong–Zhuhai–Macau Bridge:** The Hong Kong–Zhuhai–Macau Bridge operates 24 hours a day and puts major cities in the Pearl River Delta within a three hours' commute from Hong Kong.

## **Campus Accessibility**

Most buildings on campus are accessible via ramps or lifts. Connections between campus and Hung Hom Station as well as bus stop Cross Harbour Tunnel Toll Plaza (most platforms) are accessible via ramps and lifts.

## Dining Facilities on and off Campus

### On Campus

	<b>Name of Outlets</b>	<b>Location</b>
1.	Theatre Lounge	G/F, Chung Sze Yuen Building
2.	H Café	P/F, Block FGHJ Courtyard
3.	LibCafe*	P/F, Pao Yue-kong Library
4.	Lawn Café	G/F & 1/F, Block N
5.	VA Student Canteen	G/F, Shaw Amenities Building
6.	VA Staff Canteen	G/F, Shaw Amenities Building
7.	VA Kiosk	P/F, Block VA
8.	Communal Student Canteen	3/F, Communal Building
9.	Communal Staff Restaurant	4/F, Communal Building
10.	Communal Student Restaurant	4/F, Communal Building
11.	Gourmet Shop	G/F, Shaw Amenities Building
12.	V Café	P/F, Jockey Club Innovation Tower
13.	W Kiosk	P/F, Block W
14.	X Café	P/F, Block X
15.	Z Restaurant- Z Canteen	2/F, Block Z
	Z Restaurant- Coffee Bar	2/F, Block Z

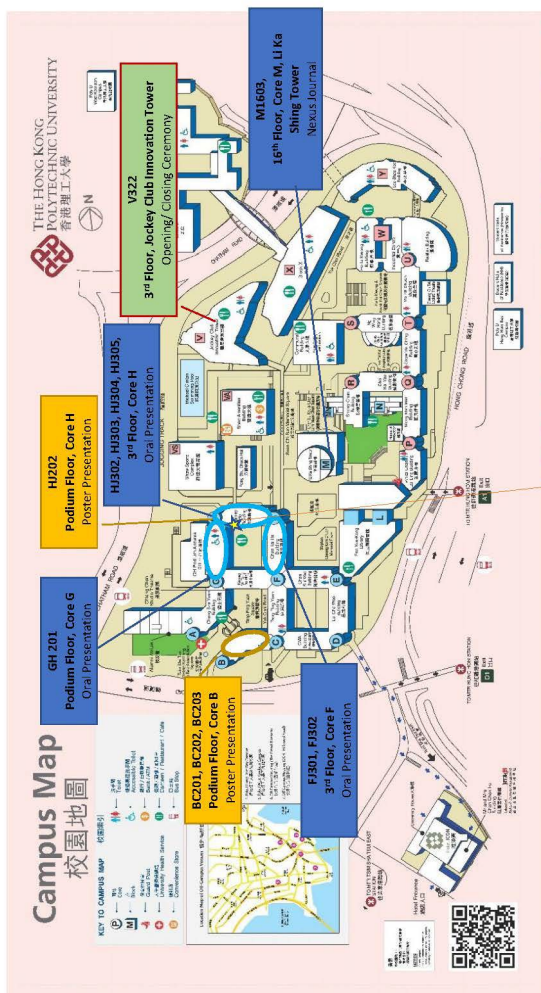
*\* For non-PolyU staff and students, take away only*

## Off Campus

There are a few hundreds of restaurants in the east Tsim Sha Tsui area that is a short walk from the PolyU campus. Take the exit in Core D area on campus and use the footbridge to go to Tsim Sha Tsui.

## Conference Venues

## PolyU Campus Map





# Room V322, 3/F Jockey Club Innovation Tower (Block V)

## Opening Ceremony

16:00-17:30 Monday, 8 May 2023

## Cocktail Reception

17:30-18:00 Monday, 8 May 2023

## Closing Ceremony

17:30-18:30 Thursday, 11 May 2023

### Third Floor

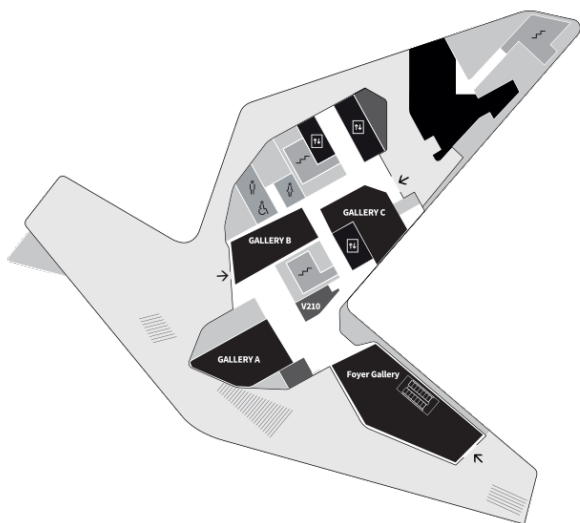


# Foyer Gallery, Podium Level, Jockey Club Innovation Tower (Block V)

## Cocktail Reception

17:30-18:00 Monday, 8 May 2023

### Podium Level



## BC, FJ, GH and HJ Wings

### Oral Presentations

Venues: GH201, FJ301-302 and HJ302-305

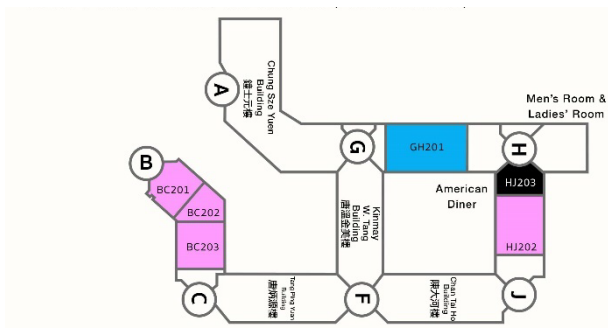
### Coffee Breaks and Poster Presentations

Venues: BC201-203, FJ304 and HJ202

### Conference Secretariat

Venue: HJ203

## Podium Level



## Third Floor



# Registration

## Registration Site

PAIR Conference registration is free. Please register through the following website:

<https://www.polyu.edu.hk/pairconference2023/registration/>

## Name Badge and Conference Programme

All registered participants who will attend the conference onsite should pick up their badges, conference programme booklet, and other materials, while stocks last, from

PAIR Conference Secretariat  
Room HJ203  
Podium Level, Stanley Ho Building  
The Hong Kong Polytechnic University

The Conference Secretariat office hours are:

Monday, 8 May 2023: 14:00 - 15:30  
Tuesday, 9 May 2023: 08:30 - 18:00  
Wednesday, 10 May 2023: 08:30 - 18:00  
Thursday, 11 May 2023: 08:30 - 17:30

Registered online participants can download the conference programme from [www.polyu.edu.hk/pairconference2023/conferenceprogramme](http://www.polyu.edu.hk/pairconference2023/conferenceprogramme).

## **Certificate of Attendance**

A Certificate of Attendance will only be issued to onsite participants upon request.

## Oral Presentation Guidelines

- Each conference room is equipped with a laptop computer and an LCD projector. Onsite speakers should send your PowerPoint/PDF file to the respective Research Institutes/Centres prior to the Conference or upload them at least one hour in advance at the Conference Secretariat (Room HJ203) and preview the presentation to ensure it will work in the conference room. Use of your personal computer is not allowed, and your presentation will not be visible to online participants.
- Online speakers should email a copy of your presentation to the Conference Secretariat [ac.pair@polyu.edu.hk](mailto:ac.pair@polyu.edu.hk) so that we can show the slides for you in case you have technical difficulties or when your internet connection is not stable.
- Please refer to the Detailed Programme of your theme for the time slot allocated to your presentation. Please allow one to two minutes to introduce you by your session chair and three minutes for discussion for a technical presentation. If you are a keynote speaker, the discussion will be at least five minutes.
- Speakers should arrive at the presentation venue or login to zoom webinar **10 minutes in advance** of your designated session.

# Poster Presentation Guidelines

- Posters must be prepared using the template provided in the Conference website [www.polyu.edu.hk/pairconference2023](http://www.polyu.edu.hk/pairconference2023). Your poster should generally be in A0 size (width: 841mm and height: 1189mm).
- A poster board measuring 1000 mm in width and 2500 mm in height is assigned to your poster. You should mount your poster between 09:30 and 17:30 on the day of your programme. Please see the detailed programme on this booklet to find your venue and poster number. The poster number will be placed on the top of the board. Presenters should **use fully the top margin of the display board** as it will be difficult to view your poster on the lower part. Please remove your poster before 18:00 of your programme. Any poster not removed by that time will be disposed without further notice.
- Adhesive velcro will be provided onsite for poster mounting. Push pins and staples are not allowed. Poster presenters are responsible to mount and dismount their posters on the display board by themselves. The organiser will not take responsibility for any loss or damage of display materials before, during, and after the Conference.

- At least one author must be available to present the accepted paper at the Conference. The presentations are during the morning and afternoon coffee breaks and afternoon poster sessions. Please refer to the detailed programme of this booklet for the time slots and venue.
- Please be active during your presentation. For example, you may start with: "May I tell you something about my research?" to a bystander.



## Programme-at-a-Glance

Monday, 8 May 2023	
16:00 - 17:30	<b>Opening Ceremony Plenary Session</b>  Room V322, 3/F Jockey Club Innovation Tower (Block V)
17:30 - 18:30	<b>Cocktail Reception</b>  Foyer Gallery and 3/F Jockey Club Innovation Tower (Block V)

Tuesday, 9 May 2023					
Theme	Nexus Journal M1603	Land and Space Room HJ303	Chinese Medicine Innovation Room FJ301	Artificial Intelligence of Things Room GH201	Advanced Manufacturing Room HJ305
09:00 – 12:45	Keynote Session	Keynote Session	Keynote Session	Keynote Session	Keynote Session
		Technical Session	Technical Session	Keynote Session	Technical Session
	Coffee / Poster				
	Keynote Session	Technical Session	Keynote Session	Keynote Session	Technical Session
Lunch Break		Lunch Break / Poster	Lunch Break		

Tuesday, 9 May 2023 (continued)						
Theme	Nexus Journal M1603	Land and Space Room HJ303	Chinese Medicine Innovation Room FJ301	Artificial Intelligence of Things Room GH201	Advanced Manufacturing Room HJ305	
14:00 – 16:00	Keynote Session	Keynote Session	/	Technical Session	Technical Session	
		Technical Session				
	Coffee / Poster			Coffee / Poster		
	Keynote Session	/		Panel Discussion	Panel Discussion	
16:00 – 17:30	Q&A / Discussion			Lab Visit / Poster	Lab Visit / Poster	

Wednesday, 10 May 2023					
Theme	Resources Engineering towards Carbon Neutrality Room HJ302	Smart Ageing Room HJ305	Mental Health Room HJ303	Intelligent Wearable Systems Room GH201	Deep Space Explorations Room HJ304
09:00 – 12:45	Keynote Session	Keynote Session	Keynote Session	Keynote Session	Keynote Session
	Technical Session	Technical Session	Coffee / Poster		Coffee / Poster
		Coffee / Poster	Technical Session	Technical Session	Technical Session
				Coffee	
	Technical Session	Technical Session	Technical Session	Technical Session	
			Panel Discussion		

Wednesday, 10 May 2023 (continued)					
Theme	Resources Engineering towards Carbon Neutrality Room HJ302	Smart Ageing Room HJ305	Mental Health Room HJ303	Intelligent Wearable Systems Room GH201	Deep Space Explorations Room HJ304
Lunch Break					
13:30 – 18:00	/	Technical Session	/	Keynote Session	/
		Coffee / Poster		Technical Session	
		Panel Discussion		Coffee	
				Technical Session	
				Panel Discussion	
		Lab Visit		Poster	

Thursday, 11 May 2023					
Theme	Smart Cities Room GH201	Smart Energy Room HJ305	Sports Science and Technology Room HJ302	SHARP Vision Room HJ303	Photonics Room HJ304
09:00 – 12:45	Keynote Session	Keynote Session	Keynote Sessions	Keynote Session	Keynote Session
	Technical Session	Technical Session		Technical Session	Technical Session
	Coffee / Poster				
		Technical Session	Technical Session	Keynote Session	Technical Sessions
Panel Discussion		Panel Discussion			Technical Session
Lunch Break					

Thursday, 11 May 2023 (continued)					
Theme	Smart Cities Room GH201	Smart Energy Room HJ305	Sports Science and Technology Room HJ302	SHARP Vision Room HJ303	Photonics Room HJ304
14:00 – 16:00	Technical Session	Technical Session	Technical Session	/	Technical Session
		Coffee / Poster			Technical Session
	Panel Discussion	Panel Discussion	Technical Session		Technical Session
	Lab Visit / Poster	Lab Visit / Poster	/		Lab Visit / Poster
17:30 – 18:30	Closing Ceremony Room V322				

# Detailed Programme on Monday, 8 May 2023

## Opening Ceremony

**Monday, 8 May 2023**

**Venue: V322, 3/F Jockey Club Innovation  
Tower (Block V)**

### **16:00-16:05 Opening Remarks**

Prof. TENG Jing-Guang

President

The Hong Kong Polytechnic University, Hong Kong

### **16:05-16:08 Objective of the Conference and Introduction of the Plenary Session Speaker**

Prof. Christopher CHAO

Vice President (Research and Innovation)

The Hong Kong Polytechnic University, Hong Kong

### **16:08-16:20 Photo Session**

### **16:20-17:25 Plenary Session: Targeting Na<sub>v</sub> Channels for Pain Relief**

Prof. YAN Nieng

Founding President

Shenzhen Medical Academy of Research and  
Translation (SMART), Shenzhen, China

### **17:25-17:30 Announcement**

Prof. CHEN Qingyan

Director of PolyU Academy for Interdisciplinary  
Research

The Hong Kong Polytechnic University, Hong Kong



# **Cocktail Reception**

**Monday, 8 May 2023**

**Venue: Foyer Gallery and 3/F Jockey Club  
Innovation Tower (Block V)**

**17:30-18:30 Cocktail Reception**

# Detailed Programme on Tuesday, 9 May 2023

## Theme: Nexus Journal

Tuesday, 9 May 2023

Venue: M1603

Chair: Prof. Jerry YAN Jinyue

**09:00-09:30 Opening and Journal Launching Session**

**09:30-10:00 Coffee (Room: M1607)**

**10:00-11:00 Keynote**

**Scientific publishing on interdisciplinary research**

Dr John PHAM

Editor-in-chief of Cell, Cambridge, MA, USA

**11:00-12:00 Keynote**

**Science and technology developed from failures**

Prof. TU Shantung

Member of Chinese Academy of Engineering,  
Professor of the East China University of Science  
and Technology, Shanghai, China

**12:00-14:00 Lunch Break**

**14:00-15:00 Keynote (Online)**

**The importance of research across disciplines and  
national boundaries for global sustainability**

Prof. CHEN Deliang

Member of the Royal Swedish Academy of  
Sciences and August Röhss Chair in Physical  
Geography, University of Gothenburg, Sweden

**15:00 - 16:00 Keynote**

**Using digital twinning to achieve systemic resilience and sustainability**

Prof. Michael OBERSTEINER

Director and Professor of the Environmental Change Institute, The University of Oxford, United Kingdom

**16:00 - 17:00 Q&A and Discussion**

# Theme: Land and Space

Tuesday, 9 May 2023

Venue: HJ303

Chair: Prof. WENG Qihao

## 09:00-09:50 Keynote

**The Making of a Sustainable Hong Kong – Path of 20 Years Ahead**

Prof. LING Kar-kan, SBS

Director of Jockey Club Design Institute for Social Innovation

Associate Director of RILS and RISA

The Hong Kong Polytechnic University, Hong Kong

## 09:50-10:10 Technical Presentation

**Envisioning sustainable urbanisation of the New Territories**

Mr Ryan IP

Vice President and Co-Head of Research

Our Hong Kong Foundation

## 10:10-10:30 Technical Presentation

**Estimating the wider economic benefits of transport investments: The case of the Hong Kong Strategic Railways project**

Prof. Anthony CHEN

Associate Head (Teaching) and Professor,

Department of Civil and Environmental Engineering,

The Hong Kong Polytechnic University, Hong Kong

## 10:30-11:00 Coffee (Room: HJ202)

### **11:00-11:20 Technical Presentation**

**Eco-engineered shoreline designs for enhancing marine biodiversity and facilitating carbon neutrality**

Prof. Kenneth LEUNG

Director of State Key Laboratory of Marine Pollution and Chair Professor of Environmental Toxicology and Chemistry, Department of Chemistry, City University of Hong Kong, Hong Kong

### **11:20-11:40 Technical Presentation**

**Impact of land use change on urban climate and air Quality**

Ir Prof. GUO Hai

Management Committee Member of RILS; Professor, Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, Hong Kong

### **11:40-12:00 Technical Presentation**

**A Sustainable Approach to Marine Reclamations Using Local Dredged Marine Soils and Wastes: Soft Soil Improvement, Physical Modelling Study, and Field Trial**

Dr CHEN Wenbo

Research Assistant Professor, Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, Hong Kong

### **12:00-13:30 Lunch Break**

**Chair: Prof. ZHAO Xiao Lin**

### **13:30-14:10 Keynote**

**Blue cities, building beyond the waterfront**

Dr Koen OLTHUIS

Founder, Waterstudio.NL, The Netherlands

### **14:10-14:30 Technical Presentation**

#### **New generation of technology for sustainable urban forestry management**

Sr Prof. Charles WONG

Management Committee Member of RILS;  
Associate Dean of Faculty of Construction and Environment and Professor, Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University, Hong Kong

### **14:30-15:00 Coffee (Room: HJ202)**

## **Theme: Land and Space**

**Tuesday, 9 May 2023**

**Time: 10:30-11:00, 12:00-13:30, 14:30-15:00**

**Venue: HJ202**

### **Poster Presentations**

**RILS 01 - withdraw**

**RILS 02 - Detection and projection of coastal flooding and beach erosion hotspots under a warming climate**

Dr WANG Shuo

The Hong Kong Polytechnic University, Hong Kong

**RILS 03 - Safety-certifiable UAV System for Terrain and Civil Infrastructure Inspection**

Mr YANG Peiwen, Dr WEN Weisong, Prof. DING Xiao-li

The Hong Kong Polytechnic University, Hong Kong

**RILS 04 - A Bottom-up Integrated Strategy for Collecting Urban Functions and Land Use Details: Data-driven Perspective with Urban Geospatial Data in Hong Kong**

Mr YU Zidong, Dr LIU Xintao

The Hong Kong Polytechnic University, Hong Kong

**RILS 05 - Historical and Projected socio-economic impacts of diurnal heat waves in Asia**

Dr Pir MOHAMMED, Prof. WENG Qihao

The Hong Kong Polytechnic University, Hong Kong

**RILS 06 - How much carbon is offset by the renewable energy of Solar PV?**

Dr WAN Luoma, Dr ZHU Xiaolin

The Hong Kong Polytechnic University, Hong Kong

**RILS 07 - A strategic-level assessment tool for integrated transportation and land use planning under urban expansion**

Mr YU Gu<sup>1</sup>, Mr ZHOU Jiankun<sup>1,2</sup>, Dr XU Yingying<sup>1</sup>, Dr LI Guoyuan<sup>1</sup>, Prof. Anthony CHEN<sup>1,3</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Hohai University, Nanjing, China

<sup>3</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

**RILS 08 - Guidelines for Designing High-efficiency Green Infrastructure for Reducing Building Energy Consumption**

Dr JIA Siqi, Prof. WENG Qihao

Department of Land Surveying and Geo-Informatics,  
The Hong Kong Polytechnic University, Hong Kong

**RILS 09 - Industrial and Non-Industrial Urban Land Expansion: An examination of the complex relationship between economic growth and carbon emissions**

Dr YOO Cheolhee, Prof. WENG Qihao

The Hong Kong Polytechnic University, Hong Kong

**RILS 10 - Evaluation of disease transmission in toilets and towards sustainable sanitary facilities**

Dr WANG Cunteng, Prof. GUO Hai

The Hong Kong Polytechnic University, Hong Kong

**RILS 11 - Remote Sensing of Urban Geological Vulnerabilities for Hong Kong's Sustainable Development**

Dr SHI Guoqiang

The Hong Kong Polytechnic University, Hong Kong

**RILS 12 - High-resolution Intelligent Land Cover/Use Mapping in Greater Bay Area**

Dr LI Zhiwei, Prof. WENG Qihao

Department of Land Surveying and Geo-Informatics,  
The Hong Kong Polytechnic University, Hong Kong

**RILS 13 - Cultural Heritage Conservation: the Transitions from Rural to Urban development in the Northern Metropolis Development areas**

Dr YUNG Hiu Kwan

The Hong Kong Polytechnic University, Hong Kong

**RILS 14 - ECOSTRESS Land Surface Temperature Enables Monitoring of Diurnal Dynamics of Surface Urban Heat Island for Urban Agglomerations**

Dr CHANG Yue<sup>1</sup>, Prof. XIAO Jinfeng<sup>2</sup>, Prof. LI Xuxiang<sup>3</sup>,  
Prof. WENG Qihao<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>University of New Hampshire, Durham, USA

<sup>3</sup>Xi'an Jiaotong University, Xi'an, China

**RILS 15 - Multi-criteria robust adaptation strategies for coastal bridges subjected to tropical cyclones**

Mr ZHU Deming, Dr DONG You

The Hong Kong Polytechnic University, Hong Kong

**RILS 16 - Dynamics and Impact of “Zombie fire” in Extreme Natural Environment**

Mr QIN Yunzhu<sup>1,2</sup>, Mr ZHANG Yichao<sup>1</sup>, Miss Dayang Nur Sakinah MUSA<sup>3</sup>, Dr LIN Shaorun<sup>1,4</sup>, Dr HUANG Xinyan<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>3</sup>Universiti Putra Malaysia, Serdang, Malaysia

<sup>4</sup>University of California, Berkeley, USA



**RILS 17 - Assessment of Policy Effects on Sustainable Development in Chinese Cities - Based on Quasi-Experimental Evidence from National Sustainable Development Experimental Zones**

Miss CHEN Jiaxin

The Hong Kong Polytechnic University, Hong Kong

**RILS 18 - Investigate Limited Participation Issue in Hong Kong REITs Market: Evidence from Objective and Subjective Factors**

Mr Demin KONG, Miss YU Sinan, Miss LIU Chunyuan, Miss CHEN Ziyi

The Hong Kong Polytechnic University, Hong Kong

**RILS 19 - Numerical analysis of time-dependent negative skin friction on pile in soft soils**

Mr LIANG Rui, Prof. YIN Zhenyu

The Hong Kong Polytechnic University, Hong Kong

**RILS 20 - Pull-out capacity of suction anchors in sand considering torsional and mooring line effect based on numerical modelling**

Mr ZHANG Min-Hao<sup>1</sup>, Prof. YIN Zhen-Yu<sup>1</sup>, Dr FU Yong<sup>2</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Southern University of Science and Technology, Shenzhen, China

# **Theme: Chinese Medicine Innovation**

**Tuesday, 9 May 2023**

**Venue: FJ301**

**Chairs: Dr Daniel MOK Kam-wah and Dr Jerry YEUNG Wing Fai**

## **09:00-09:10 Opening Remarks**

Prof. WONG Man-sau

Director of RCMI and Professor

Department of Food Science and Nutrition

The Hong Kong Polytechnic University, Hong Kong

## **09:10-10:00 Keynote**

**Acupuncture Clinical Research and Its Impact in the USA**

Prof. LAO Lixing

President and Professor, Virginia University of Integrative Medicine, USA

## **10:00-10:25 Technical Presentation**

**Traditional Chinese Medicine (TCM)-based Body Works as Integrative Solutions for Physical and Psychological Wellness**

Dr Erin LU (on behalf of Prof. Hector TSANG Wing-hong)

Research Assistant Professor

Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

## **10:25-10:50 Technical Presentation**

**The Promise of Digital Transformation in Chinese Medicine**

Ms Rowena WONG

Chief Manager (Chinese Medicine Department), Hospital Authority

## **10:50-11:20 Coffee (Room: BC201)**

### **11:20-12:10 Keynote**

#### **Recent Advance of Regeneration of Optic Nerve in Animals**

Prof. SO Kwok-fai

Chair Professor, Department of Ophthalmology,  
The University of Hong Kong, Hong Kong

### **12:10-12:35 Technical Presentation**

#### **An investigation of the effects of Medulla Tetrapanacis for mastitis**

Dr SETO Sai-wang

Associate Director, RCMI

Assistant Professor, Department of Food Science  
and Nutrition, The Hong Kong Polytechnic University,  
Hong Kong

## **Theme: Chinese Medicine Innovation**

**Tuesday, 9 May 2023**

**Time: 10:50-11:20**

**Venue: BC201**

### **Poster Presentations**

#### **RCMI 01 - Chinese medicine practitioners' consensus on Traditional Chinese Medicine diagnostic patterns, symptoms, and herbal formulas for COVID-19 survivors: A modified Delphi study**

Ms RUAN Jiayin<sup>1</sup>, Dr CHEN Shucheng<sup>1</sup>, Dr Janice HO<sup>1</sup>,  
Prof. Vivian Taam WONG<sup>2</sup>, Dr LAM Mei Yuk<sup>3</sup>, Prof.  
Hector TSANG Wing Hong<sup>4</sup>, Mr Ian Hoyin CHENG<sup>4</sup>, Dr  
YEUNG Wing Fai<sup>1</sup>

<sup>1</sup>School of Nursing, The Hong Kong Polytechnic  
University, Hong Kong

<sup>2</sup>School of Chinese Medicine, LKS Faculty of Medicine,  
The University of Hong Kong, Hong Kong

<sup>3</sup>School of Medical and Health Sciences, Tung Wah  
College, Hong Kong

<sup>4</sup>Department of Rehabilitation Sciences, Faculty of  
Health and Social Sciences, The Hong Kong Polytechnic  
University, Hong Kong

**RCMI 02 - Lantana camara L. water extract modulates phagocytotic and bactericidal activities of macrophages against bacterial pathogens**

Dr Franklin Wang-Ngai CHOW, Dr SETO Sai-Wang, Mr Patrick Pak-Ting HAU, Mr Carsten Tsun Ka KWOK, Mr Ray Chun-Wai YU

The Hong Kong Polytechnic University, Hong Kong

**RCMI 03 - Huang Lian Jie Du decoction attenuated colitis via suppressing macrophage CSF1R/SRC pathway and modulating gut microbiota**

Dr LI Xiaoxiao<sup>1,2</sup>, Ms SU Shan<sup>3</sup>, Dr ZHENG Jia-Y<sup>4</sup>, Dr Vincent KENG<sup>1,2,5</sup>, Dr ZHANG Shi-Jie<sup>4</sup>

<sup>1</sup>State Key Laboratory of Chinese Medicine and Molecular Pharmacology (Incubation), The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>2</sup>Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>College of Basic Medicine, Guangzhou University of Chinese Medicine, Guangzhou, China

<sup>4</sup>Department of Neurology, The Second Affiliated Hospital of Guangzhou University of Chinese Medicine, Guangzhou, China

<sup>5</sup>Department of Applied Biology and Chemical Technology, The Hong Kong Polytechnic University, Hong Kong, China

**RCMI 04 - Arnicolide D, a natural sesquiterpene lactone, exhibits anticancer activity against hepatocellular carcinoma by inducing oncosis**

Miss LIN Yushan<sup>1</sup>, Dr CHEN Sibao<sup>2,3,4</sup>, Dr CHEN Guoqing<sup>2,3,4</sup>

<sup>1</sup>State Key Laboratory of Chinese Medicine and Molecular Pharmacology (Incubation), Shenzhen, China

<sup>2</sup>State Key Laboratory of Chinese Medicine and Molecular Pharmacology (Incubation), The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>3</sup>Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Department of Food Science and Nutrition, The Hong Kong Polytechnic University, Hong Kong

**RCMI 05 - Lasiokaurin Inhibits Triple Negative Breast Cancer Growth by Suppression of PI3K/Akt/mTOR and STAT3 Signaling Pathways**

Miss PU Huanhuan<sup>1</sup>, Dr QU Zhao<sup>1</sup>, Miss LIN Yushan<sup>1</sup>, Dr CHEN Guo-qing<sup>1,2,3</sup>, Dr CHEN Sibao<sup>1,2,3</sup>

<sup>1</sup>State Key Laboratory of Chinese Medicine and Molecular Pharmacology (Incubation), The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>2</sup>Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Food Science and Nutrition, The Hong Kong Polytechnic University, Hong Kong

**RCMI 06 - Kidney-tonifying Chinese herbal medicine *Cistanches Herba* (CH) promotes myogenesis in C2C12 myoblasts**

Dr Christina Chui-Wa POON<sup>1,2</sup>, Mr AU-YEUNG Chun<sup>1</sup>, Prof. WONG Man-Sau<sup>1,2</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong

**RCMI 07 - The protection of Coicis Semen on hypoxia and ischemic/reperfusion injury in cellular model**

Dr TSOI Bun

The Hong Kong Polytechnic University, Hong Kong

**RCMI 08 - Neurobiological mechanisms for the anti-depressive effect of mindful and non-mindful exercises: A systematic review and meta-analysis**

Ms SUN Wen, Dr Erin Yiqing LU, Prof. Hector TSANG Wing Hong

The Hong Kong Polytechnic University, Hong Kong

**RCMI 09 - Effects of intestinal microflora on bone mineral density in osteoporosis mice with the intervention of antibiotics**

Ms ZHU Yu-Xin<sup>1</sup>, Ms PENG Hong-Yu<sup>1</sup>, Dr WONG Man-Sau<sup>2</sup>, Dr XIAO Hui-Hu<sup>3</sup>

<sup>1</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>2</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Shenzhen, China

**RCMI 10 - Novel cell cycle role in non-alcoholic fatty liver disease progression**

Miss Dorothy Ching-Hei KWAN<sup>1</sup>, Dr WEN Junru<sup>2</sup>, Dr LI Xiaoxiao<sup>3</sup>, Prof. Vincent W KENG<sup>1,3</sup>

<sup>1</sup>Department of Applied Biology and Chemical Technology, State Key Laboratory of Chemical Biology and Drug Discovery, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Second School of Clinical Medicine, Guangzhou University of Chinese Medicine, Guangzhou, China

<sup>3</sup>State Key Laboratory of Chinese Medicine and Molecular Pharmacology (Incubation), Shenzhen, China

**RCMI 11 - Glycyrrhetic acid suppresses breast cancer metastasis by inhibiting M2-like macrophage polarization via activating JNK1/2 signaling**

Dr LI Jingjing<sup>1,2</sup>, Dr SETO Sai-Wai<sup>3,2</sup>, Dr George Pak-Heng LEUNG<sup>4</sup>, Prof. Simon Ming-Yuen LEE<sup>5</sup>

<sup>1</sup>Department of Rehabilitation Sciences, Faculty of Health and Social Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Research Centre for Chinese Medicine Innovation, Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Food Science and Nutrition, Faculty of Science, Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Department of Pharmacology and Pharmacy, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong

<sup>5</sup>State Key Laboratory of Quality Research in Chinese Medicine and Institute of Chinese Medical Sciences, University of Macau, Macau

## **RCMI 12 - Target identification of the antiviral hydroxychloroquine**

Miss SHANG Jin, Ms ZHAO Qian

The Hong Kong Polytechnic University, Hong Kong

## **RCMI 13 - Bioavailability of Schisandrin B and its interactions with 5-Fluorouracil in a xenograft mouse model of colorectal cancer**

Miss LEE Pui-Kei<sup>1,2,3</sup>, Dr Vanessa Anna CO<sup>4,5</sup>, Miss YANG Yang<sup>3,2</sup>, Dr Murphy Lam Yim WAN<sup>6,7</sup>, Dr Hani EL-NEXAMI<sup>4,8</sup>, Dr ZHAO Danyue<sup>1,3,2,9</sup>

<sup>1</sup>Department of Food Science and Nutrition, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Applied Biology and Chemical Technology, Faculty of Science, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>School of Biological Sciences, The University of Hong Kong, Hong Kong

<sup>5</sup>Department of Microbiology, Faculty of Medicine, The University of Hong Kong, Hong Kong

<sup>6</sup>School of Pharmacy and Biomedical Sciences, Faculty of Science and Health, University of Portsmouth, Portsmouth, United Kingdom

<sup>7</sup>Department of Laboratory Medicine, Faculty of Medicine, Lund University, Lund, Sweden

<sup>8</sup>Institute of Public Health and Clinical Nutrition, School of Medicine, University of Eastern Finland, Kuopio, Finland

<sup>9</sup>Research Institute for Future Food, The Hong Kong Polytechnic University, Hong Kong

## **RCMI 14 - Therapeutic Potentials of Baicalein in the Treatment of Ischemic Retinopathies**

Dr PAN Li<sup>1</sup>, Ms CUI Yingkun<sup>1</sup>, Dr DO Chi-Wai<sup>1,2,3</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute of Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Research Centre for SHARP Vision, The Hong Kong Polytechnic University, Hong Kong

**RCMI 15 - Co-supplementation of ellagic acid and urolithin-producing bacteria enhanced anti-obesity efficacy and phenolic bioavailability in diet-induced obese mice**

Miss YANG Yang<sup>1,2,3</sup>, Miss LEE Pui-Kei<sup>4,2,3</sup>, Mr WANG Ke<sup>4,5</sup>, Dr ZHAO Danyue<sup>4,2,3,1</sup>

<sup>1</sup>Department of Applied Biology and Chemical Technology, Faculty of Science, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Center for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Research Institute for Future Food, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Department of Food Science and Nutrition, The Hong Kong Polytechnic University, Hong Kong

<sup>5</sup>Research Institute for Future Food, The Hong Kong Polytechnic University, Hong Kong



# Theme: Artificial Intelligence of Things

**Tuesday, 9 May 2023**

**Venue: GH201**

**Chair: Prof. CAO Jiannong**

## **09:00-09:15 Opening Remarks**

Prof. CAO Jiannong

Chair Professor, Director of RIAIoT, The Hong Kong Polytechnic University, Hong Kong

## **09:15-09:55 Keynote**

### **Data Driven Research for AIOT**

Prof. LIU Yunhao

CJ Chair Professor, Dean of the Institute of Global Innovation Exchange, Tsinghua University, China

## **09:55-10:35 Keynote**

### **Twenty-five years of Lessons Learning in AgeTech: The Past and the Future**

Prof. Alex MIHAILIDIS

Associate Vice-President – International Partnerships & Professor, University of Toronto, Canada

## **10:35-11:00 Coffee (Room: BC202)**

## **11:00-11:40 Keynote**

### **Enabling Clinical Information Processing: The Role of Edge Computing in Improving Patient Outcomes**

Prof Albert ZOMAYA

Australian Research Council Professorial Fellow, Peter Nicol Russell Chair Professor, University of Sydney, Australia

**11:40-11:55 Technical Presentation**

**Environmental, Social and Governance (ESG)  
Management: A Systems Design Approach**

Prof. Eric NGAI

Chair Professor, Department of Management and Marketing, The Hong Kong Polytechnic University, Hong Kong

**11:55-12:05 Technical Presentation**

**The feasibility study of the brain-control and humaninteraction mechanisms for the use of telerobot in people with severe physical disabilities**

Dr Joni ZHONG

Research Assistant Professor, Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

**12:05-13:30 Lunch Break**

**13:30-13:45 Technical Presentation**

**Security Analysis on Federated Learning against Malicious Attacks in AIoT Systems**

Dr HU Haibo

Associate Professor, Department of Electronic and Information Engineering, The Hong Kong Polytechnic University, Hong Kong

**13:45-14:00 Technical Presentation**

**Embedding Sensing Function into Next-Generation Cellular Network**

Dr LIU Liang

Assistant Professor, Department of Electronic and Information Engineering, The Hong Kong Polytechnic University, Hong Kong

**14:00-14:15 Technical Presentation**

**AIoT-Enabled Explanations for Healthcare: An Exploration on User Acceptance & Trust**

Prof. Stephen Jia WANG

Professor, School of Design, The Hong Kong Polytechnic University, Hong Kong

### **14:15-14:30 Technical Presentation**

#### **Personalized Eyecare: Myopia Management for Children**

Prof. KEE Chea-su

Professor, School of Optometry, The Hong Kong Polytechnic University, Hong Kong

### **14:30-15:00 Coffee (Room: BC202)**

### **15:00-16:00 Panel Discussion**

#### **How AI Transforms Healthcare industry in Hong Kong**

##### **Moderator:**

Prof. Kenneth FONG

Professor, Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

##### **Panellists:**

Prof. Albert LEE

Emeritus Professor

Founding Director of Centre for Health Education and Health Promotion, Emeritus Professor, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong; Honorary Professor, Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

Prof. John BACON-SHONE

Head of Quality Analytics,

The University of Hong Kong School of Professional and Continuing Education; Honorary Professor, Faculty of Social Sciences, The University of Hong Kong, Hong Kong

Dr Joyce CHAN

Senior Health Informatician, Hospital Authority, Hong Kong

# Theme: Artificial Intelligence of Things

Tuesday, 9 May 2023

Time: 16:00-17:30

Venue: BC202

## Poster Presentations

### **RIAIoT 01 - OGC: Unsupervised 3D Object Segmentation from Rigid Dynamics of Point Clouds**

Mr SONG Ziyang, Dr YANG Bo

The Hong Kong Polytechnic University, Hong Kong

### **RIAIoT 02 - Promising or Elusive? Unsupervised Object Segmentation from Real-world Single Images**

Miss YANG Yafei, Dr YANG Bo

The Hong Kong Polytechnic University, Hong Kong

### **RIAIoT 03 - A Quasi-Newton Subspace Trust Region Algorithm for Least-Square Problems in MIN-MAX OPTIMIZATION**

Mr QIU Zicheng<sup>1</sup>, Dr JIANG Jie<sup>2</sup>, Prof. CHEN Xiaojun<sup>1</sup>

<sup>1</sup>Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Chongqing University, Chongqing, China

### **RIAIoT 04 - Deep transformer model for forecasting stock market indices**

Mr Temitope KEHINDE<sup>1</sup>, Mr T.O. KEHINDE<sup>2</sup>, Mr CHUNG S.H.<sup>2</sup>, Mr Felix T.S. CHAN<sup>3</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Decision Sciences, Macau University of Science and Technology, Macau

### **RIAIoT 05 - A wireless IoT system in Hongkong-Zhuhai-Macau Bridge and edge computing for anomaly detection**

Dr WANG Xiaoyou, Dr WU Wanglin, Mr DU Yao, Prof. XIA Yong

The Hong Kong Polytechnic University, Hong Kong

## **RIAIoT 06 - Human-Centred AI Design Methods to Understand Intelligent Systems Design Empowered by Multisensory Experience with Textiles**

Mr MA Zengtao<sup>1,2</sup>, Ms Lissy HATFIELD<sup>1,2</sup>, Dr Elif Ozden YENIGUN<sup>1,2</sup>, Prof. Stephen WANG<sup>3,2</sup>, Ms ZHANG Ya Qi<sup>3</sup>, Ms Cong FANG<sup>3</sup>, Mr TUO Boyuan<sup>1,2</sup>, Dr Chipp JANSEN<sup>1,2</sup>, Prof. Sharon BAURIEY<sup>1,2</sup>, Prof. LEE Kun-Pyo<sup>2,3</sup>

<sup>1</sup>Royal College of Art, London, United Kingdom

<sup>2</sup>Laboratory for Artificial Intelligence in Design, Hong Kong Science Park, Hong Kong

<sup>3</sup>The Hong Kong Polytechnic University, Hong Kong

## **RIAIoT 07- Application of self-developed wireless broadband IoT technology in construction management**

Miss HU Yinong

The Hong Kong Polytechnic University, Hong Kong

## **RIAIoT 08 - Predicting Acute Oral Mucositis with Data Integration Methods for Nasopharyngeal Carcinoma Patients**

Miss DONG Yanjing<sup>1</sup>, Mr ZHANG Jiang<sup>1</sup>, Dr LAM SaiKit<sup>2,3</sup>, Miss ZHANG Xinyu<sup>1</sup>, Miss Anran LIU<sup>1</sup>, Mr TENG Xinzhil<sup>1</sup>, Miss HAN Xinyang<sup>1</sup>, Mr CAO Jin<sup>1</sup>, Mr LI Hongxiang<sup>4</sup>, Dr Francis Kar-Ho LEE<sup>5</sup>, Dr Celia Wai-Yi YIP<sup>5</sup>, Dr AU Kwok-Hung<sup>5</sup>, Dr ZHANG Yuanpeng<sup>6</sup>, Prof. CAI Jing<sup>1,7,8</sup>

<sup>1</sup>Department of Health Technology and Informatics, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Biomedical Engineering, Faculty of Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Department of Radiology, Fujian Medical University Union Hospital, Fujian Medical University, Fuzhou, Fujian, China

<sup>5</sup>Department of Clinical Oncology, Queen Elizabeth Hospital, Hong Kong

<sup>6</sup>Department of Medical Informatics, Nantong University, Nantong, China

<sup>7</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>8</sup>Research Institute for Intelligent Wearable Systems,  
The Hong Kong Polytechnic University, Hong Kong

### **RIAlot 09 - Machine learning-based model for preclinical screening of osteoporosis in Chinese population**

Dr XIE Yao Jie<sup>1</sup>, Miss YANG Qingling<sup>1</sup>, Dr CHENG Huiling<sup>1</sup>, Dr Vivian NGAI<sup>1</sup>, Dr Marc Ka-Chun CHONG<sup>2</sup>, Dr HAO Chun<sup>3</sup>, Prof. Alice LOKE<sup>1</sup>, Dr QIN Jing<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Chinese University of Hong Kong, Hong Kong

<sup>3</sup>Sun Yat-sen University, Guangzhou, China

### **RIAlot 10 - LSRSA-MIL: Long-short-range Nearest-Neighbour Aggregated Self-attention Multiple Instances Learning**

Mr JIANG Tianshu<sup>1</sup>, Mr Justin Lok Chun CHAN<sup>1</sup>, Dr CHEN Hao<sup>2</sup>, Dr WEN Chunyi<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong University of Science and Technology, Hong Kong

### **RIAlot 11 - Optoelectronic graded neurons for bioinspired in-sensor motion perception**

Dr CHEN Jiewei, Prof. CHAI Yang

Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong

### **RIAlot 12 - Third-generation Semiconductor Integrated Circuits for 5G Wireless Based on Artificial Intelligence Algorithm**

Dr ZHOU Xinyu

The Hong Kong Polytechnic University, Hong Kong

### **RIAlot 13 - Smart Work Injury Management (SWIM) System**

Dr Peter H. F. NG

The Hong Kong Polytechnic University, Hong Kong

## **RIAIoT 14 - RFLoc: A Location Inference and Tracking Attacks of Indoor Wi-Fi Devices**

Mr LI Ronghua, Dr HU Haibo, Ms YE Qingqing

The Hong Kong Polytechnic University, Hong Kong

### **Theme: Artificial Intelligence of Things**

**Tuesday, 9 May 2023**

**Time: 16:00-17:30**

**Assemble Point: PQ504**

**Lab Visit**

**Internet and Mobile Computing Laboratory**

# **Theme: Advanced Manufacturing**

**Tuesday, 9 May 2023**

**Venue: HJ305**

**Chair: Prof. MAN Hau-chung**

## **09:00-09:50 Keynote**

**Sustainable manufacturing – current and future trends**

Prof. Andrew NEE Yeh Ching

Emeritus Professor, Department of Mechanical Engineering, National University of Singapore, Singapore

## **09:50-10:15 Technical Presentation**

**Electrochemical manufacturing of fuels and chemicals**

Dr ZHANG Xiao

Assistant Professor, Department of Mechanical Engineering, The Hong Kong Polytechnic University, Hong Kong

## **10:15-10:35 Coffee (Room: BC203)**

**Chair: Prof. FU M.W.**

## **10:35-11:00 Technical Presentation**

**Surface integrity of difficult-to-machine materials by ultra-high-speed grinding**

Prof. ZHANG Bi

Chair Professor and Associate Dean for Academic Affairs, Southern University of Science and Technology, China



### **11:00-11:25 Technical Presentation**

#### **Process systems engineering for multi-scale carbon-neutral and sustainable production**

Dr REN Jingzheng

Associate Professor, Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University, Hong Kong

### **11:25-11:50 Technical Presentation**

#### **Manufacturing advanced electrode materials for sustainable calcium rechargeable batteries**

Dr XU Zheng-Long

Assistant Professor, Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University, Hong Kong

### **11:50-13:30 Lunch Break**

**Chair: Prof. CHAN K.C.**

### **13:30-13:55 Technical Presentation**

#### **Industry 4.0 to Industry 5.0 – A Pathway from Technology Development to Value Creation**

Prof. WANG Lihui

Professor and Chair of Sustainable Manufacturing, Director of Centre of Excellence in Production Research, KTH Royal Institute of Technology, Sweden

### **13:55-14:20 Technical Presentation**

#### **Cloud-based Cyber-Physical Logistics System with Nested MAX-MIN Ant Algorithm for E-commerce logistics**

Dr Carmen LEE Ka Man

Associate Professor, Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University, Hong Kong

### **14:20-14:45 Technical Presentation**

#### **Ultra-strong titanium alloys through interstitial engineering**

Dr CHEN Zibin

Assistant Professor, Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University, Hong Kong

### **14:45-15:05 Coffee (Room: BC203)**

**Chair: Prof. George HUANG**

### **15:05-16:00 Panel Discussion**

#### **Panellists:**

Prof. MAN Hau-chung

Prof. Andrew NEE Yeh Ching

Prof. ZHANG Bi

Prof. WANG Lihui

## **Theme: Advanced Manufacturing**

**Tuesday, 9 May 2023**

**Time: 10:15-10:35, 14:45-15:05, 16:00-17:30**

**Venue: BC203**

### **Poster Presentations**

#### **RIAM 01 - Design and Investigation of Bamboo-inspired Cellular Structures for Optimizing Mechanical Properties using FDM Additive Manufacturing**

Mr Muhammad Aayan MALIK, Mr Mushfiqur Rahman CHOWDHURY, Mr Safwat Khair RAYEEM, Mr Aamer NAZIR, Mr Chunjin WANG

The Hong Kong Polytechnic University, Hong Kong

#### **RIAM 02 - Design, Additive Manufacturing, and Finite Element Simulation of Novel Auxetic Swabs Applicable for Corona Virus Test**

Dr Ehsan ETEMADI<sup>1,2</sup>, Mr Mohammad BASHTANI<sup>2</sup>, Mr LUI Kin Wa<sup>3</sup>, Prof. HU Hong<sup>1</sup>

<sup>1</sup>School of Fashion & Textiles, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Mechanical Engineering, Hakim Sabzevari University, Sabzevar, Iran

<sup>3</sup>University Research Facility in 3D Printing, The Hong Kong Polytechnic University, Hong Kong

### **RIAM 03 - Distortion on Milled Thin-Wall Aluminium Structures Influenced by Initial Residual Stress and Toolpath Strategy**

Dr ZHENG Jun Yuan, Mr Robert VOYLE, Dr TANG Hon Ping, Mr Anthony MANNION

The Aviation Services Research Centre, The Hong Kong Polytechnic University, Hong Kong

### **RIAM 04 - A Novel Super-Resolution Algorithm Using Multi-Path Big-Size Convolution Kernel and Residual Network for Industrial Product Defect Detection**

Mr ZHANG Haotian, Dr TENG Long, Prof. TANG Chak-yin  
The Hong Kong Polytechnic University, Hong Kong

### **RIAM 05 - Dynamic Cognitive Load Assessment for Ergonomic Human-Robot Collaboration**

Miss Fei TIAN, Mr LI Shufei, Dr ZHENG Pai

The Hong Kong Polytechnic University, Hong Kong

### **RIAM 06 - Unravelling the deformation mechanism of an additively manufactured Ni-based superalloy via in-situ SEM-EBSD**

Dr HAN Lei<sup>1,2</sup>, Prof. FEI Chengwei<sup>2</sup>, Prof. JIAO Zengbao<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Fudan University, Shanghai, China

### **RIAM 07 - Introducing pattern control to TO-based structure design for future-oriented construction**

Mr ZHANG Zixin<sup>1,2</sup>, Dr JIANG Liming<sup>1,2</sup>, Mr Tejeswar YARLAGADDA<sup>1</sup>, Prof. Asif USMANI<sup>1,2</sup>

<sup>1</sup>Department of Building Environment and Energy Engineering, Hong Kong

<sup>2</sup>Research Institute for Sustainable Urban Development, Hong Kong

## **RIAM 08 - Electrochemical Replication and Transfer for Low-Cost, Sub-100 nm Patterning of Materials on Flexible Substrates**

Mr CHEN Zijian<sup>1</sup>, Dr LU Xi<sup>1</sup>, Prof. ZHENG Zijian<sup>2,3,4,5</sup>

<sup>1</sup>School of Fashion and Textiles, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Applied Biology and Chemical Technology, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>State Key Laboratory for Ultra-precision Machining Technology, Hong Kong

<sup>4</sup>Research Institute for Intelligent Wearable Systems, , The Hong Kong Polytechnic University, Hong Kong

<sup>5</sup>Otto Poon Charitable Foundation Research Institute for Smart Energy, The Hong Kong Polytechnic University, Hong Kong

## **RIAM 09 - Exploring the 2.5D SIMTP with the Adaptive Refinement based on the Nodal Thickness**

Dr Tejeswar YARLAGADDA, Mr ZHANG Zixin, Dr JIANG Liming, Prof. Asif USMANI

The Hong Kong Polytechnic University, Hong Kong

## **RIAM 10 - Secure Co-Creation of Industrial Knowledge Graph: Graph Complement Method with Federated Learning and ChatGPT**

Mr XIA Liqiao, Dr ZHENG Pai, Miss LIANG Yongshi  
The Hong Kong Polytechnic University, Hong Kong

## **RIAM 11 - Laser surface processing-fabricated hetero-nanostructured metallic materials with superior mechanical properties**

Dr FU Hui<sup>1</sup>, Dr LUO Jiasi<sup>1</sup>, Dr SUN Wanting<sup>1</sup>, Miss YUAN Shuqing<sup>1</sup>, Miss YANG Wenqing<sup>1</sup>, Dr YANG Xusheng<sup>1,2</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

**RIAM 12 - 3D Printed Stretchable and Permeable  
Integrated Wearable Electronics for Personalized Knee  
Osteoarthritis Management**

Miss YAN Jin

Research Institute for Advanced Manufacturing,  
Department of Biomedical Engineering, The Hong Kong  
Polytechnic University, Hong Kong

**RIAM 13 - Out-of-order algorithm for Industry 4.0  
factory operations planning, scheduling and execution**

Prof. George HUANG

Department of Industrial and Systems Engineering, The  
Hong Kong Polytechnic University, Hong Kong

**Theme: Advanced Manufacturing**

**Tuesday, 9 May 2023**

**Time: 16:00-17:30**

**Assemble Point: Outside Area of HJ201**

**Lab Visit**

**W501, University Research Facility in 3D Printing  
(U3DP)**

# Detailed Programme on Wednesday, 10 May 2023

## Theme: Resources Engineering towards Carbon Neutrality

Wednesday, 10 May 2023

Venue: HJ302

Chair: Ir Prof. POON Chi-sun

### 09:00-09:05 Opening Remarks

Ir Prof. POON Chi-sun

Director of RCRE, Head and Chair Professor,  
Department of Civil and Environmental Engineering,  
The Hong Kong Polytechnic University, Hong Kong

### 09:05-09:40 Keynote

**Mineralization of Waste Residues: Catalyzing a  
Zero-carbon Future for Construction Materials**

Prof. LING Tung-chai

Professor, College of Civil Engineering, Hunan  
University, China

### 09:40-10:05 Technical Presentation

**Promoting the Wider Use of GGBS Concrete in the  
Construction Industry for Reducing Carbon  
Emission**

Ir Jenny YEUNG

Deputy Head of Geotechnical Engineering Office  
(Planning and Standards), Civil Engineering and  
Development Department, The Government of the  
HKSAR

**10:05-10:30 Technical Presentation**

**Novel Control Strategy in Directional  
Thermocatalytic Lignocellulose Conversion toward  
Economic Biofuel Production in Urban Biorefinery**

Ir Dr Ben LEU Shao-yuan

Associate Professor, Department of Civil and  
Environmental Engineering, The Hong Kong  
Polytechnic University, Hong Kong

**10:30-11:00 Coffee (Room: BC201)**

**11:00-11:25 Technical Presentation**

**Low-carbon Pavement Materials in Hong Kong:  
Research and Applications**

Dr LENG Zhen

Associate Director of RCRE, Associate  
Professor, Department of Civil and Environmental  
Engineering, The Hong Kong Polytechnic University,  
Hong Kong

**11:25-11:50 Technical Presentation**

**Development of CO<sub>2</sub>-integrated 3D Printing  
Concrete**

Dr ZHANG Shipeng

Research Assistant Professor, Department of Civil  
and Environmental Engineering, The Hong Kong  
Polytechnic University, Hong Kong

**11:50-12:15 Technical Presentation**

**NAMI's Innovative and Low Carbon Solutions to the  
Hong Kong Construction Industry**

Ir Dr Gordon LEUNG

Associate Director of Research & Development  
(Construction)  
Nano and Advanced Materials Institute (NAMI)

**12:15-12:20 Closing Remarks**

Ir Prof. POON Chi-sun

Director of RCRE, Head and Chair Professor,  
Department of Civil and Environmental Engineering,  
The Hong Kong Polytechnic University, Hong Kong

# Theme: Resources Engineering towards Carbon Neutrality

Wednesday, 10 May 2023

Time: 10:30-11:00

Venue: BC201

## Poster Presentations

### **RCRE 01 - Sponge Microreactors for Artificial Enzymatic Synthesis of Glucose Precursor from CO<sub>2</sub>**

Dr ZHU Yujiao<sup>1,2</sup>, Miss XIE Fengjia<sup>1</sup>, Dr REN Kangning<sup>2</sup>,  
Prof. ZHANG Xuming<sup>1,3</sup>

<sup>1</sup>Department of Applied Physics, The Hong Kong  
Polytechnic University, Hong Kong

<sup>2</sup>Department of Chemistry, Hong Kong Baptist  
University, Hong Kong

<sup>3</sup>Photonics Research Institute, The Hong Kong  
Polytechnic University, Hong Kong

### **RCRE 02 - Thermal safety of lithium-ion battery under extreme storage and transport environment: from fire explosion theory to electrochemical characterization**

Mr LIU Yanhui<sup>1</sup>, SUN Peiyi<sup>1</sup>, Dr HUANG Xinyan<sup>1</sup>, Dr NIU  
Huichang<sup>2</sup>

<sup>1</sup>Department of Building Environment and Energy  
Engineering, The Hong Kong Polytechnic University,  
Hong Kong

<sup>2</sup>Guangzhou Institute of Industrial Technology,  
Guangzhou, China

### **RCRE 03 - Influence of hydration degree of C<sub>3</sub>S and β- C<sub>2</sub>S pastes on the subsequent CO<sub>2</sub> curing**

Miss YU Hao, Prof. LING Tung-Chai

College of Civil Engineering, Hunan University,  
Changsha, China



**RCRE 04 - Upcycling of municipal solid incineration wastes for the production of carbonatable binder**

Miss WANG Xiaoli, Prof. LING Tung-Chai

College of Civil Engineering, Hunan University,  
Changsha, China

**RCRE 05 - Comparative Life Cycle Assessment of High Strength Eco-pervious Concrete by Using Recycled Waste Glass Materials**

LIU Xiaoyi, Dr HSU Shu-Chien

Department of Civil and Environmental Engineering,  
The Hong Kong Polytechnic University, Hong Kong

**RCRE 06 - Ambitions in corporate carbon-neutrality goal setting: Consequences and antecedents**

WANG Shuhan, Dr FAN Di, Dr Chris K.Y. LO

School of Fashion and Textiles, The Hong Kong  
Polytechnic University, Hong Kong

**RCRE 07 - Fixation of Cobalt Atoms in Keratin-Based Activated Biochar for Efficient Electrocatalytic Water Splitting**

MING Yang<sup>1</sup>, LIU Chang<sup>1</sup>, SHI Shuo<sup>2</sup>, LI Jiashen<sup>3</sup>, YANG Ming<sup>4</sup>, Dr FEI Bin<sup>1</sup>

<sup>1</sup>School of Fashion and Textiles, The Hong Kong  
Polytechnic University, Hong Kong

<sup>2</sup>Department of Biomedical Engineering, City University  
of Hong Kong, Hong Kong

<sup>3</sup>Department of Materials, University of Manchester,  
United Kingdom

<sup>4</sup>Department Applied Physics, The Hong Kong  
Polytechnic University, Hong Kong

**RCRE 08 - Sustainability-oriented process optimization of thermochemical treatment of sewage sludge and poultry litter for waste-to-wealth**

SHI Tao, Dr REN Jingzheng

Department of Industrial and Systems Engineering, The  
Hong Kong Polytechnic University, Hong Kong

## **RCRE 09 - Turning local food processing by-products into low-carbon 3D printing materials**

Dr WONG Ka-Hing <sup>1</sup>, CHAN Oi Yee<sup>1</sup>, ZHANG Qiaozhi <sup>2</sup>, Dr Iris K.M. YU<sup>3</sup>, Prof. Daniel C.W. TSANG<sup>2</sup>

<sup>1</sup>Department of Food Science and Nutrition, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Civil and Environmental Engineering, National University of Singapore, Singapore

## **RCRE 10 - Innovation in Low Carbon Construction Materials**

Research Centre for Resources Engineering towards Carbon Neutrality, The Hong Kong Polytechnic University, Hong Kong

# Theme: Smart Ageing

Wednesday, 10 May 2023

Venue: HJ305

Chair: Ir Prof. ZHENG Yong Ping

## 09:00-09:30 Keynote

**The role of AI in Eldercare: Examples, Lessons, and the Future**

Prof. Alex MIHAILIDIS

Professor, Department of Occupational Science and Occupational Therapy, Temerity Faculty of Medicine, University of Toronto, Canada

## 09:30-10:00 Technical Presentation

**Imaging and therapeutic decision-making in the age of artificial intelligence**

Prof. XING Lei

Jacob Haimson and Sarah S. Donaldson Professor of Medical Physics and Director of Medical Physics Division of Radiation Oncology Department, Stanford University, USA

## 10:00-10:30 Technical Presentation

**Getting Smart with Digital Health and Gerontechnology**

Prof. TEH Pei Lee

Head of Department, Department of Management, Monash University, Malaysia

## 10:30-11:00 Coffee (Room: HJ202)

Chair: Prof. David SHUM

## 11:00-11:30 Technical Presentation

**Gerontechnology: Proof of Concept is Necessary but not Sufficient**

Dr William KEARNS

Immediate past President, International Society of Gerontechnology, University of South Florida, USA

### **11:30-12:00 Technical Presentation**

**Robots: The potential to reduce the societal impact of an older population**

Prof. Wendy MOYLE

Program Director, Healthcare Practice and Survivorship (HPS), Menzies Health Institute Queensland, Griffith University, Australia

### **12:00-13:30 Lunch Break**

**Chair: Prof. Louise CUMMINGS**

### **13:30-14:00 Technical Presentation**

**Addressing the Intergenerational Digital Divide in China: Progress, Challenges, and the Need for Inclusive Design and Social Regulations**

Dr TIAN Lanning

Founder of SSIDC Elderly information Institute, Beijing, China

### **14:00-14:30 Technical Presentation**

**Empowering Older Adults through Gerontechnology: Innovations and Implications**

Ms Grace CHAN

Business Director, The Hong Kong Council of Social Service, Hong Kong

### **14:30-15:00 Coffee (Room: HJ202)**

**Chair: Ir Prof. ZHENG Yong Ping**

### **15:00-16:00 Panel Discussion**

**Gerontechnology: What is its future?**

**Panellists:**

Prof. Alex MIHAILIDIS

Prof. TEH Pei Lee

Dr William KEARNS

Dr TIAN Lanning

Ms Grace CHAN

# Theme: Smart Ageing

Wednesday, 10 May 2023

Time: 10:30-11:00, 14:30-15:00

Venue: HJ202

## Poster Presentations

### RISA 01 - Mobile Ankle-foot

#### Exoneuromusculoskeleton for Self-help Gait

#### Telerehabilitation

Dr YE Fuqiang<sup>1,2</sup>, Mr RONG Wei<sup>1</sup>, Mr LI Waiming<sup>1</sup>, Mr PANG Man-kit<sup>3</sup>, Dr WAI Hon-wah<sup>3</sup>, Miss WONG Kwok-ting<sup>3</sup>, Prof. Lilly LI<sup>4</sup>, Mr HONG Zicong<sup>5</sup>, Prof. GUO Song<sup>5</sup>, Dr MA Zong-hao<sup>1</sup>, Prof. ZHENG Yongping<sup>1</sup>, Prof. CHEN Fei<sup>2</sup>, Dr HU Xiaoling<sup>1</sup>, Prof. POON Waisang<sup>6</sup>

<sup>1</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Shenzhen Key Laboratory of Robotics Perception and Intelligence, Southern University of Science and Technology, Shenzhen, China

<sup>3</sup>Industrial Centre, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>School of Fashion and Textiles, The Hong Kong Polytechnic University, Hong Kong

<sup>5</sup>Department of Computing, The Hong Kong Polytechnic University, Hong Kong

<sup>6</sup>Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong

### RISA 02 - Cytoplasmic myosin II localization regulates force transmission efficiency and mediates the mechano-adaptation of circulating tumor cells to fluid shear flow

Mr ZHANG Cunyu<sup>1,2,3</sup>, Dr Kai TANG<sup>1,3</sup>, Miss LI Keming<sup>1,3</sup>, Dr XIN Ying<sup>1,3</sup>, Dr TAN Youhua<sup>1,2,3</sup>

<sup>1</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>2</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Biomedical Engineering, The Hong

**RISA 03 - Aging induced matrix stiffening alters breast cancer metastatic organotropism**

Mr HU Guanshuo<sup>1,2</sup>, Dr TAN Youhua<sup>1,2</sup>

<sup>1</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

**RISA 04 - Local soft niches in the primary breast tumor promote brain metastasis via mechanotransduction-mediated HDAC3 activity**

Dr TANG Kai<sup>1,2,3</sup>, Prof. TAN Youhua<sup>1,2,3</sup>

<sup>1</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

**RISA 05 - The development of an e-Health system to enhance healthy lifestyles of older adults with sarcopenia**

Dr Justina YW LIU<sup>1,2</sup>, Dr Calvin LUK<sup>2,3</sup>, Mr LING K.K.<sup>2,3</sup>, Dr Jerry WF YEUNG<sup>1,2</sup>, Dr SUN Yi<sup>2,4</sup>, Dr Kenneth LO<sup>2,5</sup>, Dr Patrick PK KOR<sup>1</sup>, Dr Gabriel CH FONG<sup>6</sup>, Prof. Thomas KS CHOI<sup>1</sup>, Dr Daphne CHEUNG<sup>1,2</sup>, Prof. ZHENG Yongping<sup>2,7</sup>

<sup>1</sup>School of Nursing, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institution of Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Jockey Club Design Institute for Social Innovation, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Department of Building and Real Estate, The Hong Kong Polytechnic University, Hong Kong

<sup>5</sup>Department of Food Science and Nutrition, The Hong Kong Polytechnic University, Hong Kong

<sup>6</sup>Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>7</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

**RISA 06 - Development and Verification of a 3D  
Ultrasound Imaging System for Cerebral Arteries**

Mr LI Shuai, Dr Queenie TSUNG Kwan Shea, Dr LING  
Yan To, Prof. ZHENG Yong-Ping  
Department of Biomedical Engineering, The Hong Kong  
Polytechnic University, Hong Kong

**RISA 07 - Multi-view Contrastive Learning with  
Additive Margin for Adaptive Nasopharyngeal  
Carcinoma Radiotherapy Prediction**

Miss SHENG Jiabao<sup>1,2</sup>, Dr ZHANG Yuanpeng<sup>3</sup>, Prof. CAI  
Jing<sup>1,2,4</sup>, Dr Saikit LAM<sup>5,2</sup>, Mr ZHANG Jiang<sup>1</sup>

<sup>1</sup>Department of Health Technology and Informatics,  
The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Smart Ageing, The Hong Kong  
Polytechnic University, Hong Kong

<sup>3</sup>Nantong University, Nantong, China

<sup>4</sup>Research Institute for Intelligent Wearable Systems,  
The Hong Kong Polytechnic University, Hong Kong

<sup>5</sup>Department of Biomedical Engineering, The Hong  
Kong Polytechnic University, Hong Kong

**RISA 08 - What can staff benefit from manual for  
caring residents with mental handicap plus cognitive  
impairment?**

Dr TSUI Chi Man

The Hong Kong Polytechnic University, Hong Kong

**RISA 9 - Interventions for Sense of Coherence (SOC) in  
Chronic Disease and Older Adults (CDOA): A Scoping  
Review and intervention component analysis**

Ms LIU Yaqian, Prof. Angela Y. M LEUNG, Dr Jed  
MONTAYRE, Ms YUEN Yok Yee

The Hong Kong Polytechnic University, Hong Kong

**RISA 10 - Muscle Quality Assessment Kit for  
Sarcopenia Screening for Older Adults**

Dr SHEA Tsung Kwan, Mr LEE Ka Shing, Mr KHAW Jian  
Vei, Prof. ZHENG Yong Ping

The Hong Kong Polytechnic University, Hong Kong

**RISA 11 - Effect of a Cantonese-speaking smart doll intervention in the institutionalized Chinese population in Hong Kong: A pilot study**

Ms LAW Man Ching, Mr CHAN Tsz On, Ms WONG Hoi Ching, Ms WONG Kit Naam, Mr MAK Hing Yin, Prof. ZHENG Yongping

The Hong Kong Polytechnic University, Hong Kong

**RISA 12 - Multi-View Analysis of Knee Radiographs to Predict Surgical Replacement Risk**

Mr ZHANG Jiang<sup>1</sup>, Mr JIANG Tianshu<sup>2</sup>, Mr Justin Lok-Chun CHAN<sup>2</sup>, Mr Joffy Sing-Hin LAU<sup>2</sup>, Mr WANG Wei<sup>2</sup>, Mr TENG Xinzhì<sup>1</sup>, Dr Lewis Ping-Keung CHAN<sup>3</sup>, Prof. CAI Jing<sup>1,4,5</sup>, Prof. WEN Chunyi<sup>2,4</sup>

<sup>1</sup>Department of Health Technology and Informatics, The Hong Kong Polytechnic University, Hong Kong.

<sup>2</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Orthopaedics and Traumatology, The University of Hong Kong, Hong Kong

<sup>4</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>5</sup>Research Institute for Intelligent Wearable Systems, The Hong Kong Polytechnic University, Hong Kong

**RISA 13 - The investigation of the neural mechanism involved in the rapid and sustained antidepressant effects of acute exercise**

Miss CHENG Tong

The Hong Kong Polytechnic University, Hong Kong

**RISA 14 - The Effect of Environmental Settings on Walking Comfort of Older and Younger Adults in Blistering Summer**

Dr TAN Zheng, Ms REN Guancong, Dr OUYANG Wanlu  
The Hong Kong Polytechnic University, Hong Kong

**RISA 15 - Age-related Changes of Verbal Abilities: A Longitudinal Study of Hong Kong Older Adults**

Ms HUI Nga-Yan<sup>1</sup>, Dr Manson Cheuk-Man FONG<sup>1,2</sup>, Prof. William Shiyuan WANG<sup>1,2</sup>

<sup>1</sup>Research Centre of Language, Cognition, and



Neuroscience, Department of Chinese and Bilingual Studies, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute of Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

**RISA 16 - Machine Learning Based Sleep Postural Behaviour Surveillance System with Respiratory and Skeletal Alignment Tracking for Elderly**

Mr Andy Yiu-Chau TAM<sup>1,2</sup>, Dr James Chung-Wai CHEUNG<sup>1,2</sup>

<sup>1</sup>Department of Biomedical Engineering, Faculty of Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

**RISA 17 - SCNN1 genes: new regulatory factors in control of estrogen production**

Dr RUAN Yechun, Ms XU Ruiyao, Ms MA Xiyang, Ms QUE Yanting, Dr CHEN Junjiang

Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

**RISA 18 - Speak more or understand more: a preliminary study on the age-related changes in association between language and memory abilities**

Dr XIE Chenwei<sup>1</sup>, Prof. WANG Shiyuan<sup>1,2</sup>

<sup>1</sup>Department of Chinese and Bilingual Studies, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Smart Ageing, The Polytechnic University of Hong Kong, Hong Kong

**RISA 19 - Tracking Living Therapeutic with Ultrasound Imaging**

Mr JIANG Yizhou, Dr HOU Xuandi, Miss ZHAO Xinyi, Mr JING Jianing, Prof. SUN Lei

The Hong Kong Polytechnic University, Hong Kong

**RISA 20 - Machine Learning-based Temporal Motion Analysis to Detect Symptomatic Knee Osteoarthritis with Sit-to-stand Video**

Mr CHAN Lok Chun<sup>1,2</sup>, Mr SZE Sheung Wang<sup>1</sup>, Dr Billy SO<sup>3</sup>, Dr Lewis CHAN Ping Keung<sup>4</sup>, Dr WEN Chunyi<sup>1</sup>

<sup>1</sup>Department of Biomedical Engineering, Faculty of Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Rehabilitation Science, Faculty of Health and Social Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Department of Orthopaedics and Traumatology, The University of Hong Kong, Hong Kong

### **RISA 21 - Lempel-Ziv complexity shows inverted U-shaped pattern across the adult lifespan**

Dr Matthew King-Hang MA<sup>1</sup>, Dr Manson Cheuk-Man FONG<sup>1,2</sup>, Prof. William Shiyuan WANG<sup>1,2</sup>

<sup>1</sup>Research Centre for Language, Cognition and Neuroscience, Department of Chinese and Bilingual Studies, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

### **RISA 22 - Sodium environment and sodium channel genes in the regulation of insulin secretion**

Ms QUE Yanting<sup>1</sup>, Dr RUAN Yechun<sup>1,2</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

### **RISA 23 - Pilot study on quantification of cross-sectional area and echogenicity changes of geniohyoid, digastric and mylohyoid muscles in healthy normal aging elderlies during swallowing using ultrasonography – A Hong Kong context**

Mr CHAN Siu Wai<sup>1</sup>, Dr Elaine KWONG<sup>2,3</sup>, Prof. ZHENG Yongping<sup>1,3</sup>, Mr YIP Chun Yan<sup>2</sup>

<sup>1</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Chinese and Bilingual Studies, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

**RISA 24 - Predicting the presence of dysphagia by swallowing sequence variability and event concurrency using linear classification models: a pilot study**

Mr Wilson Yiu Shun LAM<sup>1,2</sup>, Dr Elaine KWONG<sup>1,2</sup>, Miss Huberta Wai Tung CHAN<sup>1</sup>, Prof. ZHENG Yongping<sup>3,2</sup>

<sup>1</sup>Department of Chinese and Bilingual Studies, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

**RISA 25 - Modulation of deep neural circuits and regulation of parkinsonian motor behaviors with sonogenetics**

Prof. SUN Lei

The Hong Kong Polytechnic University, Hong Kong

**RISA 26 - Kinematics and Muscle co-contractions at the Hip, Knee, and Ankle Joints in Older Adults with History of Falls after Sudden Loss of Balance**

Mr Ringo Tang-Long ZHU<sup>1,2</sup>, Prof. ZHENG Yong-Ping<sup>1,2</sup>, Dr Christina Zong-Hao MA<sup>1,2</sup>

<sup>1</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong.

<sup>2</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

**RISA 27 - Investigation of Oral Frailty and its Functional Limitation in Older Adults**

Miss Suen Yue Sarah POON<sup>1</sup>, Prof. Elaine Yee Lan KWONG<sup>1</sup>, Prof. CHEN Hui<sup>2</sup>, Prof. Yee Man Angela LEUNG<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The University of Hong Kong, Hong Kong

## **RISA 28 - Towards Regional Brain Age Models: Region-Sensitive Morphological Associations of Age and Gender**

Dr Manson Cheuk-Man FONG<sup>1</sup>, Dr Matthew King-Hang MA<sup>1</sup>, Miss CHEN Jiaxin<sup>1</sup>, Miss FENG Yun<sup>1</sup>, Dr HUI Nga-Yan<sup>1</sup>, Miss LIU Zhuoya<sup>1</sup>, Prof. Mary Miu Yee WAYE<sup>2</sup>, Prof. CHIEN Wai Tong<sup>2</sup>, Prof. William Shiyuan WANG<sup>1,2</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Chinese University of Hong Kong, Hong Kong

## **RISA 29 - Design Thinking in Aging Society--- A Case Study of the Elderly Community Centre in Shenzhen**

Miss WANG Xiao, Dr YAO Mei Yu, Prof. LI Li  
School of Fashion and Textile, The Hong Kong Polytechnic University, Hong Kong

## **RISA 30 - Independent Contribution of Migraine and Traditional Vascular Risk Factors on the Development of Stroke in Middle-Aged and Older Adults: An Umbrella Review and Network Meta-analysis**

Mr TIAN Longben, Dr Justina Yat Wa LIU, Dr YAO Jie Xie  
School of Nursing, The Hong Kong Polytechnic University, Hong Kong

## **RISA 31 - Which cognitive ability is more affected in normal aging?**

Miss CHEN Jiaxin<sup>1</sup>, Dr Manson Cheuk-Man FONG<sup>1,2</sup>, Dr HUI Nga Yan<sup>1</sup>, Miss FENG Yun<sup>1</sup>, Miss LI Fangfei<sup>1</sup>, Dr Matthew King-Hang MA<sup>1,2</sup>, Prof. William Shiyuan WANG<sup>1,2,3</sup>

<sup>1</sup>Research Centre for Language, Cognition, and Neuroscience, Department of Chinese and Bilingual Studies, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Electronic Engineering, The Chinese University of Hong Kong, Hong Kong

**RISA 32 - Resting-state Functional Connectivity Between the Cerebellum and Cortical Networks: Individual Differences in Verbal Working Memory**  
Miss LI Fangfei<sup>1</sup>, Dr Manson Cheuk-Man FONG<sup>1</sup>, Prof. William Shiyuan WANG<sup>1,2</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Chinese University of Hong Kong, Hong Kong

**RISA 33 - Potential mechanisms underlying the impaired attention and working memory performance in older adults with chronic low back pain: an fMRI study**

Mr ZHOU Zhixing<sup>1</sup>, Dr Edward S HUI<sup>2</sup>, Dr Georg S. KRANZ<sup>1</sup>, Mr Jeremy R CHANG<sup>1</sup>, Prof. ZHENG Yong-ping<sup>3,4</sup>, Dr Sonata S.Y. YAU<sup>1,4</sup>, Dr Arnold Y.L. WONG<sup>1,4</sup>

<sup>1</sup>Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Imaging and Interventional Radiology, The Chinese University of Hong Kong, Hong Kong

<sup>3</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

**RISA 34 - Designing a sensor-enabled urban green care farm (S-Farm) with older adults in Hong Kong**

Dr Aria C.H. YANG<sup>1</sup>, Ms Able C.L. KWOK<sup>1</sup>, Dr Richard LI<sup>2</sup>, Dr WU Yiyang Bow<sup>1</sup>, Dr Markus WERNLI<sup>3</sup>, Dr Jennifer Yoohyun LEE<sup>3</sup>, Ms Annette VONG<sup>4</sup>, Ms LO Ka Wen<sup>3</sup>, Prof. Angela Y.M. LEUNG<sup>5</sup>, Dr Calvin LUK<sup>4</sup>, Prof. LING K.K.<sup>4</sup>

<sup>1</sup>School of Design, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Computing, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>School of Design, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Jockey Club Design Institute for Social Innovation, The Hong Kong Polytechnic University, Hong Kong

<sup>5</sup>School of Nursing, The Hong Kong Polytechnic University, Hong Kong

## **Theme: Smart Ageing**

**Wednesday, 10 May 2023**

**Time: 16:00 / 16:30 / 17:00 (3 sessions)**

**Assemble Point: HJ305**

**Lab Visit**

**Smart Ageing Hub**

# Theme: Mental Health

Wednesday, 10 May 2023

Venue: HJ303

Chair: Prof. Hector TSANG Wing-hong

## 09:00-09:45 Keynote

**Youth Mental Health in Hong Kong: Challenges and Response During the Pandemic Years and Beyond**  
Prof. Eric CHEN

Chi-li Pao Foundation Professor of Psychiatry, Chair Professor in Psychiatry, School of Clinical Medicine, The University of Hong Kong, Hong Kong

## 09:45-10:00 Coffee (Room: BC202)

Chair: Prof. Benjamin YEE

## 10:00-10:30 Technical Presentations

**Integration of Basic Science in Mental Health Research**

Prof. Benjamin YEE

Associate Director of MHRC, Professor, Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

**From Inflammatory Bowel Disease to Brain Health**

Dr William TAI

Assistant Professor, Department of Applied Biology and Chemical Technology, The Hong Kong Polytechnic University, Hong Kong

## 10:30-11:00 Coffee (Room: BC202)

Chair: Dr Jessie LIN

## 11:00-11:30 Technical Presentations

**Changes in Brain Activity Comparing Smoking and Non-smoking Schizophrenia Patients: Study Protocol and Preliminary Findings**

Dr MAK Yim Wah

Associate Professor, School of Nursing, The Hong Kong Polytechnic University, Hong Kong

### **Early Detection and Intervention for Mental Health Using Ecological Momentary Approaches**

Dr Jessie LIN

Assistant Professor, Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

**Chair: Prof. CHEN Juan**

### **11:30-12:00 Technical Presentations**

#### **Examining Effectiveness of Web-based Single-session Growth Mindset Interventions for Adolescent Mental Health: A Four-armed Randomised Controlled Trial Study**

Dr ZHU Shimin

Associate Professor, Department of Applied Social Sciences, The Hong Kong Polytechnic University, Hong Kong

#### **Do Climate Change Concerns and Beliefs Necessarily Accompany Anxiety? A Person-centered Approach to Understanding the Profiles of Climate Change Opinions and Climate Anxiety**

Dr William CHAN

Assistant Professor, Department of Applied Social Sciences, The Hong Kong Polytechnic University, Hong Kong

### **12:00-12:45 Panel Discussion**

#### **Moderator and Panellist:**

Prof. Hector TSANG Wing-hong

Interim Director of MHRC, Cally KWONG Mei Wan  
Professor in Psychosocial Health, Chair Professor of Rehabilitation Sciences and Head, Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong



## Theme: Mental Health

Wednesday, 10 May 2023

Time: 10:30-11:00

Venue: FJ304

### Poster Presentations

#### **MHRC 01 - The efficacy and safety of Transcranial Pulse Stimulation (TPS) on young adolescents with Attention-Deficit-Hyperactivity Disorder (ADHD)**

Dr Teris CHEUNG<sup>1,2</sup>, Dr Bolton CHAU<sup>3</sup>, Mr FONG Kwan Hin<sup>1</sup>, Miss Joyce Yuen Ting LAM<sup>1</sup>, Dr Herman LO<sup>4</sup>, Dr LI Man Ho<sup>5</sup>, Prof. Albert Martin Man Chim LI<sup>6</sup>, Dr Roland BEISTEINER<sup>7</sup>, Prof. LEI Sun<sup>8</sup>, Prof. Benjamin YEE<sup>3,2</sup>, Dr Calvin Pak Wing CHENG<sup>9</sup>

<sup>1</sup>School of Nursing, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Mental Health Research Centre, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Department of Applied Social Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>5</sup>Department of Psychiatry, The Chinese University of Hong Kong, Hong Kong

<sup>6</sup>Department of Paediatrics, The Chinese University of Hong Kong, Hong Kong

<sup>7</sup>Department of Neurology, Vienna Medical University, Vienna, Austria

<sup>8</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>9</sup>Department of Psychiatry, The University of Hong Kong, Hong Kong

## **MHRC 02 - The association between life satisfaction and anxiety symptoms in Hong Kong elderly: a moderated mediation analysis**

Prof. CHEN Lu Hua<sup>1,2,3</sup>, Prof. Shamay S.M. NG<sup>1</sup>, Dr Frank H.Y. LAI<sup>4</sup>, Dr Ada W.T. FUNG<sup>5</sup>, Dr Cynthia Y.Y. LAI<sup>1</sup>

<sup>1</sup>Department of Rehabilitation Sciences, Faculty of Health and Social Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Mental Health Research Center, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Research Institute for Smart Ageing, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Northumbria University, United Kingdom

<sup>5</sup>Faculty of Social Sciences, Hong Kong Baptist University, Hong Kong

## **MHRC 03 - Secure but Depressed? Welfare Participation and Mental Health in Hong Kong**

Dr LIU Mengyu<sup>1</sup>, Prof. CHEN Juan<sup>1,2</sup>, Prof. WU Xiaogang<sup>3</sup>

<sup>1</sup>Department of Applied Social Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Mental Health Research Centre, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Center for Applied Social and Economic Research, NYU Shanghai, Shanghai, China

## **MHRC 04 - Why Does Nature Enhance Psychological Well-being? A Self-Determination Account**

Dr YANG Ying<sup>1,2</sup>, Prof. CAI Huajian<sup>1,2</sup>, Prof. YANG Ziyang<sup>1,2</sup>, Dr ZHAO Xiaochong<sup>3</sup>, Dr LI Mei<sup>4</sup>, Dr HAN Rui<sup>4</sup>, Prof. Sylvia Xiaohua CHEN<sup>5,6</sup>

<sup>1</sup>Chinese Academy of Sciences, Beijing, China

<sup>2</sup>University of Chinese Academy of Sciences, Beijing, China

<sup>3</sup>Zhejiang Agricultural Business College, Hangzhou, China

<sup>4</sup>Hangzhou Normal University, Hangzhou, China

<sup>5</sup>Department of Applied Social Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>6</sup>Mental Health Research Centre, The Hong Kong Polytechnic University, Hong Kong

## **MHRC 05 - Cross-diagnostic efficacy of IDLPFC rTMS for neuropsychiatric disorders: a systematic review and meta-analysis**

Miss Rebecca L.D. KAN<sup>1</sup>, Prof. Frank PADBERG<sup>2,3</sup>, Mr Cristian G. GIRON<sup>1</sup>, Mr Tim T.Z. LIN<sup>1</sup>, Miss Bella B.B. ZHANG<sup>1</sup>, Dr Andre R BRUNONI<sup>4,5</sup>, Dr Georg S. KRANZ<sup>1,6,7,8</sup>

<sup>1</sup>Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Psychiatry and Psychotherapy, University Hospital, LMU Munich, Bavaria, Germany

<sup>3</sup>Center for Non-invasive Brain Stimulation Munich-Augsburg, Augsburg, Germany

<sup>4</sup>Departamento de Clínica Médica, Faculdade de Medicina da Universidade de São Paulo, São Paulo, Brazil

<sup>5</sup>Laboratory of Neurosciences (LIM-27), Instituto de Psiquiatria, HC-FMUSP, São Paulo, Brazil

<sup>6</sup>Department of Psychiatry and Psychotherapy, Comprehensive Center for Clinical Neurosciences and Mental Health, Medical University of Vienna, Vienna, Austria

<sup>7</sup>Mental Health Research Centre, The Hong Kong Polytechnic University, Hong Kong

<sup>8</sup>The State Key Laboratory of Brain and Cognitive Sciences, The University of Hong Kong, Hong Kong

## **MHRC 06 - Understanding COVID-19 vaccine hesitancy among diverse ethnic groups in Hong Kong: a qualitative study**

Dr LI Yan<sup>1</sup>, Dr Ivy Yan ZHAO<sup>1</sup>, Miss LEE Kit Ching<sup>1</sup>, Dr LI Mengqi<sup>1</sup>, Dr LEUNG Sau Fong<sup>1</sup>, Prof. Daniel BRESSINGTON<sup>2</sup>, Dr YANG Lin<sup>1</sup>, Dr XIE Grace<sup>1</sup>, Prof. Alex MOLASIOTIS<sup>3</sup>, Prof. Angela Y.M LEUNG<sup>1</sup>

<sup>1</sup>School of Nursing, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>College of Nursing and Midwifery, Charles Darwin University, Darwin, Australia

<sup>3</sup>University of Derby, Derby, United Kingdom

**MHRC 07 - Neurofeedback Training to Improve Prefrontal Functioning in Older Adults with Subclinical Depression and Anxiety: A Randomised Control Trial**

Prof. David SHUM<sup>1</sup>, Dr Michael YEUNG<sup>2</sup>, Dr Sally CAO<sup>1</sup>, Miss Jacqueline CHAN<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Hong Kong Education University, Hong Kong

**MHRC 08 - Is adaptive thinking a skill?—  
Performance on the Iowa Gambling Task in healthy young adults**

Ms WANG Chutian

The Hong Kong Polytechnic University, Hong Kong

**MHRC 09 - Stability of retrospective self-reports of adverse childhood experiences: a 6-year follow-up with Chinese young adults**

Dr Grace W.K. HO<sup>1,2</sup>, Dr William TAI<sup>3</sup>, Dr Camilla LO<sup>4</sup>, Mr WONG Kwan Ho<sup>1</sup>, Prof. Benjamin YEE<sup>5,2</sup>

<sup>1</sup>School of Nursing, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Mental Health Research Centre, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Applied Biology and Chemical Technology, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Department of Applied Social Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>5</sup>Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

**MHRC 10 - withdraw**

**MHRC 11 - Preliminary findings of adjuvant speech and tDCS therapy on brain plasticity in aphasic patients: An fMRI investigation**

Dr Faisal BAIG, Dr WONG Min Ney, Dr Manson FONG, Dr Fiona CHEN, Prof. William WANG

The Hong Kong Polytechnic University, Hong Kong

**MHRC 12 - Effectiveness of internet-based self-help money management program in increasing in financial**

**self-efficacy among people with mental illness: A randomized controlled trial**

Mr CHAN Ka Long<sup>1</sup>, Ms POON Fung Oi<sup>1</sup>, Mr Bun Lai Hong LAM<sup>1</sup>, Dr Ian Chun Bun LAM<sup>2</sup>, Dr Kevin Ka Shing CHAN<sup>3</sup>

<sup>1</sup>Integrated Mental Health Services, Baptist Oi Kwan Social Service, Hong Kong

<sup>2</sup>Department of Early Childhood Education, The Education University of Hong Kong, Hong Kong

<sup>3</sup>Department of Psychology, The Education University of Hong Kong, Hong Kong

**MHRC 13 - The synchronous effect of mental health between hotel supervisors and employees: From the perspective of organizational contagion**

Dr XU Yuchen, Dr Catherine CHEUNG

School of Hotel & Tourism Management, The Hong Kong Polytechnic University, Hong Kong

**MHRC 14 - Muscle myokine apelin mediates the antidepressant effects of physical exercise in a mouse model of depression**

Mr YU Jiasui<sup>1,2</sup>, Dr YAU Suk-Yu<sup>1,2</sup>

<sup>1</sup>Department of Rehabilitation Sciences, Faculty of Health and Social Sciences, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Mental Health Research Centre, The Hong Kong Polytechnic University, Hong Kong

**MHRC 15 - The effectiveness of interventions in reducing sedentary behaviours in office workers: A systematic review and meta-analysis**

Ms WANG Cong, Dr Erin Yiqing LU, Ms SUN Wen, Mr CHANG Rui, Prof. Hector W.H. TSANG

The Hong Kong Polytechnic University, Hong Kong

**MHRC 16 - Communicated Sense-Making in the era of Covid-19: Informal Mental Health Communication in the South Asian Minority Community of Hong Kong**

Miss Ashima SHUKLA

The Hong Kong Polytechnic University, Hong Kong

# Theme: Intelligent Wearable Systems

Wednesday, 10 May 2023

Venue: GH201

Chair: Prof. ZHENG Zijian

## 09:00-09:50 Keynote

### Fast Development and Deployment of AI Techniques for Real Medical Applications

Prof. SHEN Dinggang

Professor, Founding Dean, School of Biomedical Engineering, ShanghaiTech University, China  
Director of IDEA Lab, ShanghaiTech University, China  
IEEE Fellow, AIMBE Fellow, IAPR Fellow and MICCAI Fellow  
Co-CEO of Shanghai United Imaging Intelligence Co., Ltd.

## 09:50-10:20 Technical Presentation

### Organic Electrochemical Transistors for Sensing Applications

Prof. YAN Feng

Associate Director of Research Institute for Intelligent Wearable Systems, Chair Professor of Organic Electronics, Department of Applied Physics, Faculty of Science, The Hong Kong Polytechnic University, Hong Kong

## 10:20-10:35 Coffee (Room: BC203)

## 10:35-11:05 Technical Presentation

### Retina-inspired vision sensors

Prof. CHAI Yang

Associate Dean of Faculty of Science and Professor of Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong

### **11:05-11:35 Technical Presentation**

#### **Intelligent skin electronics for healthcare monitoring and XR**

Dr YU Xinge

Associate Professor, Department of Biomedical Engineering, City University of Hong Kong, Hong Kong

### **11:35-12:05 Technical Presentation**

#### **Textile Composite Electrodes for Extreme-Flexible Batteries and Beyond**

Prof. ZHENG Zijian

Associate Director of Research Institute for Intelligent Wearable Systems, Chair Professor of Soft Materials and Devices, Department of Applied Biology and Chemical Technology, Faculty of Science, The Hong Kong Polytechnic University, Hong Kong

### **12:05-14:00 Lunch Break**

**Chair: Prof. YAN Feng**

### **14:00-14:50 Keynote**

#### **Multifunctional Nanocomposites: Achievements and prospects**

Prof. Robert YOUNG

Professor, Polymer Science and Technology, Department of Materials, The University of Manchester, United Kingdom

National Graphene Institute, Henry Royce Institute, The University of Manchester, United Kingdom

Fellow of the Royal Society

Fellow of the Royal Academy of Engineering

Member of the Academy of Europe

### **14:50-15:20 Technical Presentation**

#### **Research and Application of Wearable Physiological and Psychological Computing Technology**

Dr SHU Lin

Senior Engineer, Associate Head, School of Future Technology, South China University of Technology, China

**15:20-15:35 Coffee (Room: BC203)**

**15:35-16:05 Technical Presentation**

**Ionic Thermoelectric Generator with a Giant Output Power Density and High Energy Density Enabled by Synergy of Thermodiffusion and Redox-pair Transfer Effect**

Prof. ZENG Wei

Professor, Institute of Chemical Engineering,  
Guangdong Academy of Sciences, China

**16:05-17:00 Panel Discussion**

**Part 1 (16:05-16:25): Publishing in Nature Portfolio – from Nature Research journals to Nature Reviews journals**

**Moderator:**

Prof. CHAI Yang

**Panellist:**

Dr Olga BUBNOVA

Chief Editor, Nature Reviews Electrical Engineering,  
Springer Nature

**Part 2 (16:25-17:00): Challenges and Opportunities of Intelligent Wearable Systems**

**Moderator:**

Prof. TAO Xiaoming

**Panellists:**

Prof. YAN Feng

Prof. ZENG Wei

Dr SHU Lin



# Theme: Intelligent Wearable Systems

Wednesday, 10 May 2023

Time: 17:00-18:00

Venue: BC203

## Poster Presentations

### **RI-IWEAR 01 - On-Demand and Skin-Conformable Hydrogel Electrodes for Epidermal Bioelectronics**

Dr DING Yichun<sup>1</sup>, Mr CHEN Fan<sup>1</sup>, Prof. ZHENG Zijian<sup>1,2,3,4</sup>

<sup>1</sup>School of Fashion & Textiles, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Applied Biology and Chemical Technology, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Research Institute for Intelligent Wearable System, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Otto Poon Charitable Foundation Research Institute for Smart Energy, The Hong Kong Polytechnic University, Hong Kong

### **RI-IWEAR 02 - Wet-adhesive and Permeable Electronic Skin**

Mr CHEN Fan<sup>1</sup>, Prof. ZHENG Zijian<sup>1,2,3,4</sup>

<sup>1</sup>School of Fashion and Textiles, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Applied Biology and Chemical Technology, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Research Institute for Intelligent Wearable Systems, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Otto Poon Charitable Foundation Research Institute for Smart Energy, The Hong Kong Polytechnic University, Hong Kong

### **RI-IWEAR 03 - Self-powered Chenille Carpet for Smart Home Monitoring and Security Systems**

Miss DONG Shanshan<sup>1</sup>, Dr YAO Pengpeng<sup>2</sup>, Miss JU Zixin<sup>1</sup>, Prof. LIU Yanping<sup>3</sup>, Prof. HU Hong<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Zhuhai Fudan Innovation Institute, Zhuhai, China

<sup>3</sup>Donghua University, Shanghai, China

### **RI-IWEAR 04 - Nonlinear heart rate variability analysis to classify physical fatigue in construction workers.**

Dr Shahnawaz ANWER<sup>1</sup>, Prof. LI Heng<sup>1</sup>, Mr Imran MEHMOOD<sup>1</sup>, Dr Arnold WONG<sup>2</sup>

<sup>1</sup>Department of Building and Real Estate, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

### **RI-IWEAR 05 - Self-powered acoustic fabrics with wide sound frequency coverage enabled by multi-channel piezoelectric fibres**

Mr WU Jingyang

The Hong Kong Polytechnic University, Hong Kong

### **RI-IWEAR 06 - Fluids in wearable systems for active sensory stimulations**

Mr TANG Shengyang

The Hong Kong Polytechnic University, Hong Kong

### **RI-IWEAR 07 - Produce electrical energy from the human body**

Dr LIN Shuping

The Hong Kong Polytechnic University, Hong Kong

### **RI-IWEAR 08 - Asymmetric strategy for enhanced performance of flexible electroadhesive clutch**

Dr LI Jun, Prof. TAO Xiaoming

The Hong Kong Polytechnic University, Hong Kong

### **RI-IWEAR 09 - Wearable Urine Analysis System for Monitoring Jaundice and Urination Events**

Dr LIU Su

The Hong Kong Polytechnic University, Hong Kong

**RI-IWEAR 10 - Gigantic effect due to phase transition on thermoelectric properties of ionic sol-gel materials**

Mr LIU Jin<sup>1</sup>, Prof. ZENG Wei<sup>2</sup>, Prof. TAO Xiaoming<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Guangdong Academy of Sciences, GuangZhou, China

**RI-IWEAR 11 - Static and Dynamic Electromechanical Behaviors of Elastic Knitted Sensing Fabric Under Pressure for Compression Textiles**

Miss YANG Yiyi, Miss TIAN Xiao, Dr NIU Ben, Dr HUA Tao

School of Fashion and Textiles, The Hong Kong Polytechnic University, Hong Kong

**RI-IWEAR 12 - Pressure Prediction and Customized Design for Medical Compression Stockings**

Dr XIONG Ying<sup>1,2</sup>, Mr LUO Heng<sup>1,2</sup>, Prof. TAO Xiaoming<sup>1,2</sup>

<sup>1</sup>School of Fashion and Textiles, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Intelligent Wearable Systems, The Hong Kong Polytechnic University, Hong Kong

**RI-IWEAR 13 - The impact of sodium hydroxide and acetone pretreatments on adhesion of 3D printed polylactic acid filaments onto linen and polyester fabrics**

Miss LIU Jing, Prof. Kinor JIANG

The Hong Kong Polytechnic University, Hong Kong

# Theme: Deep Space Explorations

Wednesday, 10 May 2023

Venue: HJ304

Chair: Prof. WU Bo

## 09:00-09:50 Keynote

**Geological diversity and strategic exploration potential of lakes and seas on Mars**

Dr Joseph MICHALSKI

Associate Professor, Department of Earth Sciences,  
The University of Hong Kong, Hong Kong

## 09:50-10:20 Coffee (Room: BC201)

## 10:20-10:50 Technical Presentation

**Prediction of Martian Atmospheric Conditions for China's First Mars Mission Tianwen-I**

Dr CHOW Kim Chiu

Assistant Professor, State Key Laboratory of Lunar and Planetary Sciences, Macau University of Science and Technology, Macau

## 10:50-11:20 Technical Presentation

**Anoxic chemical weathering under a reducing greenhouse on early Mars**

Dr LIU Jiacheng

Research Assistant Professor, Laboratory for Space Research, The University of Hong Kong, Hong Kong

## 11:20-11:50 Technical Presentation

**The mechanical property of minerals, laboratory scale samples and discontinuities for planetary rocks**

Prof. TANG Xuhai

Professor, Wuhan University, China

### **11:50-12:20 Technical Presentation**

#### **Chang'e-5 basalt sheds light on the young volcanism on the Moon**

Prof. YANG Wei

Professor of Geochemistry, Institute of Geology and Geophysics, Chinese Academy of Sciences, China

### **12:20-12:50 Technical Presentation**

#### **Geologic History of the South Circumpolar Region of the Lunar South Pole**

Dr Sergey KRASILNIKOV

Postdoctoral Fellow, The Hong Kong Polytechnic University, Hong Kong

## **Theme: Deep Space Explorations**

**Wednesday, 10 May 2023**

**Time: 09:50-10:20**

**Venue: BC201**

### **Poster Presentations**

#### **RCDSE 01 - Micro-CT characterization of lunar regolith using machine learning-based segmentation**

Mr WU Huanyu<sup>1</sup>, Mr ZOU Yuan<sup>1</sup>, Dr ZHANG Chi<sup>2</sup>, Prof. YANG Wei<sup>2</sup>, Dr ZHAO Qi<sup>1</sup>, Dr Andy Y.F. LEUNG<sup>1</sup>, Prof. YU Tao<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing, China

#### **RCDSE 02 - Construction Technologies Based on Lunar Regolith**

Prof. YU Tao, Dr Michael CHAN, Dr Ben MOU

The Hong Kong Polytechnic University, Hong Kong

#### **RCDSE 03 - Engineering a microbe that bio-mine from Lunar Regolith Simulant**

Dr SONG Lin Chua, Mr WEI Wei

The Hong Kong Polytechnic University, Hong Kong

**RCDSE 04 - Landing Site Selection and Characterization  
of Tianwen-1(Zhurong Rover) on Mars**

Prof. WU Bo, Mr CHEN Long

The Hong Kong Polytechnic University, Hong Kong

**RCDSE 05 - Assessing the physical and mechanical  
properties of extraterrestrial regolith**

Dr ZHAO Qi, Prof. ZOU Yuan

The Hong Kong Polytechnic University, Hong Kong

# Detailed Programme on Thursday, 11 May 2023

## Theme: Smart Cities

Thursday, 11 May 2023

Venue: GH201

Chair: Prof. John SHI

### 09:00-09:40 Keynote

#### **Building Sustainable City with AI Remote Sensing**

Prof. ZHU Jiasong<sup>2</sup> on behalf of Prof. LI Qingquan<sup>1</sup>

<sup>1</sup>Party Secretary, Professor of School of Architecture and Urban Planning, Shenzhen University

<sup>2</sup>Dean, Professor of Department of Transportation Engineering, Shenzhen University

### 09:40-10:00 Technical Presentation

#### **Building a Smart, Sustainable and Resilient Hong Kong**

Dr Julian KWAN Shun-hang

Assistant Director (Tech), Civil Engineering and Development Department, The Government of the HKSAR

### 10:00-10:20 Technical Presentation

#### **Behind Visuals, Beyond Spatial – The Wider Dimensions of Geospatial Science to foster the Development of Liveable Cities**

Mr TSOI Cheong-wai

Assistant Director/Spatial Data, Lands Department, The Government of the HKSAR

### 10:20-10:50 Coffee (Room: BC203)

Chair: Dr Tony ZHUGE

### **10:50-11:10 Technical Presentation**

#### **Remote Sensing Image Fusion for Urban Environment Monitoring**

Dr ZHU Xiaolin

Associate Professor, Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University, Hong Kong

### **11:10-11:30 Technical Presentation**

#### **Smart Initiatives in Public Housing Developments**

Ir Ben WAT Chun Pan

Senior Structural Engineer/10, Housing Department, The Government of the HKSAR

### **11:30-12:00 Panel Discussion**

#### **Towards Sustainable and Smart Cities**

#### **Moderator:**

Prof. John SHI

#### **Panellists:**

Dr Julian KWAN Shun-hang

Mr TSOI Cheong-wai

Ir Ben WAT Chun Pan

### **12:00-14:00 Lunch Break**

**Chair: Dr LIU Xintao**

### **14:00-14:20 Technical Presentation**

#### **From Common Spatial Data Infrastructure (CSDI) and 3D Digital Map to Digital Twin**

Ms WONG Pui Yu, Amy<sup>2</sup> on behalf of Sr CHAN Yue-chun<sup>1</sup>

<sup>1</sup>Head of Spatial Data Office, Development Bureau, The Government of the HKSAR

<sup>2</sup>Senior Land Surveyor/Spatial Data Analytics in Spatial Data Office, Development Bureau, The Government of the HKSAR



#### **14:20-14:40 Technical Presentation**

##### **Technology Innovations in Smart Cities and Urban Informatics**

Prof. John SHI

Director of SCRI and Chair Professor of Geographical Information Science and Remote Sensing, The Hong Kong Polytechnic University, Hong Kong

#### **14:40-15:00 Technical Presentation**

##### **The Role of Deep Learning for Understanding and Designing City Streets**

Prof. JIN Ying

Director of the Martin Centre for Architectural and Urban Studies, Professor of Architecture and Urbanism, Deputy Head (Research), Department of Architecture, University of Cambridge, United Kingdom

#### **15:00-15:30 Panel Discussion**

##### **Spatial Data Infrastructure for Smart Cities**

##### **Moderator:**

Dr LIU Xintao

##### **Panellists:**

Ms Amy WONG Pui Yu on behalf of Sr CHAN Yue-chun

Prof. John SHI

Prof. JIN Ying

# Theme: Smart Cities

Thursday, 11 May 2023

Time: 10:20-10:50, 16:00-17:30

Venue: BC203

## Poster Presentations

### **SCRI 01 - A systematic mapping framework for backpack mobile mapping system in common monotonous environments**

Dr BAO Sheng, Prof. SHI Wenzhong, Dr CHEN Pengxin,  
Dr XIANG Haodong, Dr YU Yue  
The Hong Kong Polytechnic University, Hong Kong

### **SCRI 02 - Beyond Prediction: On-street Parking Recommendation using Heterogeneous Graph-based List-wise Ranking**

Mr SUN Hanyu, Dr HUANG Xiao, Dr MA Wei  
The Hong Kong Polytechnic University, Hong Kong

### **SCRI 03 - Recovering traffic data from the corrupted noise: A doubly physics-regularized denoising diffusion model**

Dr ZHENG Zhenjie<sup>1</sup>, Dr HU Zijian<sup>1</sup>, Dr WAN Zihan<sup>1</sup>, Dr WANG Zhengli<sup>2</sup>, Dr MA Wei<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Nanjing University, Nanjing, China

### **SCRI 04 - Real-time fire calorimetry using UAVs and artificial intelligence**

Mr WANG Zilong, Mr ZHANG Tianhang, Dr HUANG Xinyan

The Hong Kong Polytechnic University, Hong Kong

**SCRI 05 - Integrating Diverse Fields of Study to Formulate a Safe Firefighting Time (SFT) for Effective Emergency Response to Major Fire Disasters**

Dr ZHANG Yuxin, Mr ZHANG Xiaoning, Dr HUANG Xinyan

Research Centre for Fire Safety Engineering,  
Department of Building Environment and Energy  
Engineering, The Hong Kong Polytechnic University,  
Hong Kong

**SCRI 06 - withdraw**

**SCRI 07 - Smart Fire Evacuation with AIoT powered Dynamic Exit Signs**

Mr WONG Ho Yin, Mr ZHANG Xiaoning, Mr WANG Meng, Dr HUANG Xinyan

The Hong Kong Polytechnic University, Hong Kong

**SCRI 08 - Smart City Construction and Urban Carbon Emissions: Examination Based on Digital Technology Empowerment Pathway**

Mr JIAO Yuyuan

The Hong Kong Polytechnic University, Hong Kong

**SCRI 09 - Super-resolution Satellite Images Using proposed Deep Learning Algorithm**

Dr Hatem KESHK<sup>1</sup>, Prof. LI Jianqiang<sup>2</sup>, Ms Ekram REWEHEL<sup>2</sup>

<sup>1</sup>Otto Poon Charitable Foundation Smart Cities Research Institute, The Hong Kong Polytechnic University, Kowloon, Hong Kong

<sup>2</sup>School of Software Engineering, Beijing University of Technology, Beijing, China

**SCRI 10 - Intelligent Fusion Platform for Mobile Sensing and Seamless Positioning**

Dr YU Yue, Prof. SHI Wenzhong

The Hong Kong Polytechnic University, Hong Kong

**SCRI 11 - CFD simulation of atmospheric dispersion at city scale under Monin-Obukhov similarity theory-based thermal stratification**

Dr WANG Hao, Miss TIAN Xue, Miss ZHANG Yuchun  
City University of Hong Kong, Hong Kong

**SCRI 12 - Urban GeoBIM Construction by Fusing LiDAR Data and As-designed BIM Models**

Dr SHAO Jie<sup>1</sup>, Prof. YAO Wei<sup>1,2,3</sup>, Mr WANG Puzuo<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>3</sup>Otto Poon Charitable Foundation Smart Cities Research Institute, The Hong Kong Polytechnic University, Hong Kong

**SCRI 13 - A novel spatial agent-based electric vehicle diffusion model considering supply and demand dynamics: a case of Beijing**

Dr HUANG Xingjun<sup>1</sup>, Prof. ZHUGE Chengxiang<sup>1,2</sup>, Mr LAU Chinghong<sup>1</sup>, Ms LIU Junbei<sup>1</sup>

<sup>1</sup>Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Otto Poon Charitable Foundation Smart Cities Research Institute, The Hong Kong Polytechnic University, Hong Kong

**SCRI 14 - A weibit-based combined travel demand model for future transportation networks with connected and autonomous vehicles**

Mr GU Yu<sup>1</sup>, Prof. Anthony CHEN<sup>1,2</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

## **SCRI 15 - MSDFNet: A Multi-Scale Deep Feature Fusion Change Detection Network for Bitemporal Remote Sensing Images**

Dr WANG Lukang<sup>1</sup>, Dr ZHANG Min<sup>2,3</sup>, Prof. SHI Wenzhong<sup>2,3</sup>

<sup>1</sup>School of Environment and Spatial Informatics, China University of Mining and Technology, Xuzhou, China

<sup>2</sup>Otto Poon Charitable Foundation Smart Cities Research Institute, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University, Hong Kong

## **SCRI 16 - Exploring Gen Z's Engagement in Nature-Based Tourism: A Hong Kong Case Study**

Mr TANG Lei, Miss YANG Siqi, Mr QI Xiang, Miss YANG Sanqi

The Hong Kong Polytechnic University, Hong Kong

## **SCRI 17 - Boulder identification using multi-source remote sensing data and deep learning**

Mr WANG Shifeng<sup>1</sup>, Dr ZHANG Min<sup>1,2</sup>, Prof. SHI Wenzhong<sup>1,2</sup>

<sup>1</sup>Department of Land Surveying and Geo-Informatics, The Hong Kong Polytechnic University, Hong Kong.

<sup>2</sup>Otto Poon Charitable Foundation Smart Cities Research Institute, The Hong Kong Polytechnic University, Hong Kong

## **Theme: Smart Cities**

*(pre-registration required)*

**Thursday, 11 May 2023**

**Time: 16:00-17:30**

**Assemble Point: ZN607, 6/F, North Tower, Block Z**

### **Lab Visit**

**Laboratory for Smart City and Spatial Big Data Analytics**

# Theme: Smart Energy

Thursday, 11 May 2023

Venue: HJ305

Chair: Prof. NI Meng

## 09:00-09:50 Keynote

### Recent Research Progress of Photovoltaic Materials for Polymer Solar Cells

Prof. LI Yongfang

Professor, Institute of Chemistry, Chinese Academy of Sciences, China

Professor, College of Chemistry, Chemical Engineering and Materials Science of Soochow University, China

Member of Chinese Academy of Sciences

## 09:50-10:10 Technical Presentation

### Metal-organic frameworks for catalysis and energy

Prof. XU Qiang

Chair Professor

Department of Chemistry and Department of Materials Science and Engineering, Southern University of Science and Technology, China

## 10:10-10:30 Technical Presentation

### The Promotion of Emerging Energy Materials for Lithium-Sulfur Batteries through Lithium Bond Chemistry

Prof. ZHANG Qiang

Professor, Department of Chemical Engineering, Tsinghua University, China

## 10:30-11:00 Coffee (Room: BC201)

### **11:00-11:20 Technical Presentation**

#### **Storing Solar Energy with E-fuels**

Prof. ZHAO Tianshou

Director of Energy Institute for Carbon Neutrality  
Chair Professor of Mechanical & Energy Engineering  
Southern University of Science & Technology  
(SUSTech), China  
CAS Elected Academician  
PAIR Senior Fellow, The Hong Kong Polytechnic  
University, Hong Kong

### **11:20-11:40 Technical Presentation**

#### **Supporting Renewable Energy Uptake and Firming through Energy Storage and VPP in an Electricity Market**

Prof. DONG Zhaoyang

Singapore Power Group Endowed Chair Professor of  
Power Engineering, School of Electrical & Electronic  
Engineering  
Director, Singapore Power Group – Nanyang  
Technological University Joint Lab,  
Cluster Director, Energy Research Institute & NTU,  
Nanyang Technological University, Singapore  
SHARP Professor in Energy Systems, School of  
Electrical Engineering and Telecommunications;  
Director, UNSW Digital Grid Futures Institute, Division  
of Research  
The University of New South Wales (UNSW), Sydney,  
Australia  
Director, Australian Research Council Research Hub  
on Integrated Energy Storage Solutions, Australia

### **11:40-12:00 Technical Presentation**

#### **Understanding metals' roles in layered structure oxides for high-energy lithium-ion batteries**

Prof. LU Jun

Chair Professor, School of Chemical and Biological  
Engineering, Zhejiang University, China

### **12:00-13:30 Lunch Break**

**Chair: Prof. XIAO Fu Linda**

**13:30-13:50 Technical Presentation**

**Digitalisation for the Future Weather-Driven Smart Energy System**

Prof. Henrik MADSEN

Professor, Section Head for Dynamical Systems, Applied Mathematics and Computer Sciences, Head of CITIES Centre, Technical University of Denmark (DTU), Denmark

**13:50-14:10 Technical Presentation**

**Heat pump innovations and its role in 2060 China Carbon Neutral Strategies**

Prof. WANG Ruzhu

Chair professor of Shanghai Jiao Tong University, China  
Director, MOE Engineering Research Center of Solar Energy

**14:10-14:30 Technical Presentation**

**Smart, energy-efficient and flexible buildings for carbon-neutrality in high-density cities**

Prof. WANG Shengwei

Director of Otto Poon Charitable Foundation Research Institute for Smart Energy, Chair  
Professor of Building Energy and Automation, Otto Poon Charitable Foundation Professor in Smart Buildings, The Hong Kong Polytechnic University, Hong Kong

**14:30-15:00 Coffee (Room: BC201)**

**15:00-16:00 Panel Discussion**



# Theme: Smart Energy

Thursday, 11 May 2023

Time: 10:30-11:00, 14:30-15:00, 16:00-17:30

Venue: BC201

## Poster Presentations

**RISE 01 - A stable Janus lithium-textile electrode for long-life and high-energy lithium metal battery**

Miss CAI Jiehua

The Hong Kong Polytechnic University, Hong Kong

**RISE 02 - withdraw**

**RISE 03 - A Squid-like Flexible Heat Pipe with Multiple Tentacles for Smart Energy Applications**

Dr KANG Zhanxiao, Prof. FAN Jintu

The Hong Kong Polytechnic University, Hong Kong

**RISE 04 - Surface Regulation with Polymerized Small Molecular Acceptor Towards Efficient Inverted Perovskite Solar Cells**

Mr LI Dongyang, Prof. LI Gang

Department of Electronic and Information Engineering,  
Otto Poon Charitable Foundation Research Institute for  
Smart Energy, The Hong Kong Polytechnic University,  
Hong Kong

**RISE 05 - Why Are Lights Killing Us? A Quantified Research on Light Pollution Using Tic-Tac-Tensor Model**

Mr ZHAO Qingsen, Mr ZHANG Haolin, Miss CHEN

Rubing

The Hong Kong Polytechnic University, Hong Kong

## **Theme: Smart Energy**

**Thursday, 11 May 2023**

**Time: 16:00-17:30**

**Assemble Point: HJ305**

### **Lab Visit**

**Advanced Materials and Electronics Laboratory  
(BC701)**

**Theme Based Smart MicroGrid Research Laboratory  
(AG713)**

# Theme: Sports Science and Technology

Thursday, 11 May 2023

Venue: HJ302

Chair: Ir Prof. ZHANG Ming

## 9:00-9:55 Keynote

**A wearable device for preventing ankle sprains in sports**

Dr Daniel FONG

Reader in Sports Medicine and Biomechanics,  
School of Sport, Exercise and Health Sciences,  
Loughborough University, United Kingdom

## 9:55-10:50 Keynote

**Rehabilitation based on biomechanical stimulation**

Prof. FAN Yubo

Dean, School of Biological Science and Medical  
Engineering, Beihang University, Beijing

## 10:50-11:05 Coffee (Room: BC202)

## 11:05-12:00 Keynote

**Advancing Neuromechanical Research to Understand  
Ergogenic Effects of Neurostimulation  
on Athletic Performance**

Prof. LIU Yu

Professor and Dean of Scientific Research Institute,  
Shanghai University of Sport, China

## 12:00-13:30 Lunch Break

Chair: Dr Kenneth CHENG

### **13:30-13:55 Technical Presentation**

#### **Investigation of the tennis ball aerodynamics using computational fluid dynamics**

Dr ZHONG Siyang

Assistant Professor, Department of Aeronautical and Aviation Engineering, The Hong Kong Polytechnic University, Hong Kong

### **13:55-14:20 Technical Presentation**

#### **Knowledge transfer from sport science and technology to sport recovery**

Prof. Amy FU

Associate Director of RISports & Professor, Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

### **14:20-14:45 Technical Presentation**

#### **Wearable sensor feedback technology for swimming performance enhancement**

Dr Billy SO

Assistant Professor, Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

### **14:45-16:00 Coffee (Room: BC202)**

**Chair: Dr Annie WANG**

### **16:00-16:25 Technical Presentation**

#### **An Aesthetic Approach to Design Science Research in a Technological World**

Prof. LI Li

Associate Director of PAIR & Professor, School of Fashion and Textiles, The Hong Kong Polytechnic University, Hong Kong

### **16:25-16:50 Technical Presentation**

#### **Investigation of Body Surface Variation in Different Joint Movements/Sports and the Application in Sportswear Design**

Dr Tracy MOK

Associate Professor, School of Fashion and Textiles,  
The Hong Kong Polytechnic University, Hong Kong

### **16:50-17:15 Technical Presentation**

#### **Evidence-based Design of Functional Footwear in the Chinese Sports Industry**

Dr Jason CHEUNG

CTO / Co-Founder of OLAB HK Limited, Senior Research Fellow, RISports, The Hong Kong Polytechnic University, Hong Kong

## **Theme: Sports Science and Technology**

**Thursday, 11 May 2023**

**Time: 10:50-11:05, 14:45-16:00, 17:15-17:30**

**Venue: BC202**

### **Poster Presentations**

#### **RISP 01 - Deep Reinforcement Learning-based Player Performance Evaluation and Tactical Decision-Making in Racket Sports**

Mr TAO Weizhi, Dr HUANG Hailong

Department of Aeronautical and Aviation Engineering,  
The Hong Kong Polytechnic, Hong Kong

#### **RISP 02 - Prediction of lower limb running kinematics using a single wearable sensor**

Mr Zaheen Ahmed IQBAL, Dr Daniel H.K. CHOW

Department of Health and Physical Education, The Education University of Hong Kong, Hong Kong

### **RISP 03 - Dual-signal sensing electronic skin for sports performance evaluation**

Dr ZHANG Heng, Dr SHEN Xi

Department of Aeronautical and Aviation Engineering,  
The Hong Kong Polytechnic University, Hong Kong

### **RISP 04 - Building a fabric structure for efficient moisture wicking, transport, and evaporation**

Dr LIU Fatang, Dr PAN Zhefei, Prof. LI Li, Prof. AN Liang

<sup>1</sup>Department of Mechanical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>School of Fashion and Textiles, The Hong Kong Polytechnic University, Hong Kong

### **RISP 05 - The Rehabilitation Exoskeleton Robotics with Series Elastic Actuator Joint**

Miss SUN Chi, Dr TENG Long, Prof. TANG Chak Yin, Prof. ZHANG Ming

<sup>1</sup>Department of Industrial and Systems Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

### **RISP 06 - Joint Kinematics and Soft Tissue Stretch Tracking for Bikers using a Soft Sensor Based System**

Dr James Chung-Wai CHEUNG<sup>1,2</sup>, Dr Duo Wai-Chi WONG<sup>1,2</sup>, Dr Daphne Sze-Ki CHEUNG<sup>3</sup>, Dr Gilbert Wing-Kai LAM<sup>4</sup>

<sup>1</sup>Department of Biomedical Engineering, Faculty of Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Sports Science and Technology, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>School of Nursing, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Sports Information and External Affairs Centre, Hong Kong

## **RISP 07 - Virtual Reality-based High-Intensity Interval Training (HIIT) on Recumbent Boxing**

Dr WANG Yi<sup>1</sup>, Dr James Chung-Wai CHEUNG<sup>2</sup>, Dr Duo Wai-Chi WONG<sup>2</sup>, Dr LAM Wing-Kai<sup>3</sup>

<sup>1</sup>Renmin University of China, Beijing, China

<sup>2</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Hong Kong Sports Institute, Hong Kong

## **RISP 08 - CFD Simulation of Sports-footwear Microclimate and Aerodynamics**

Mr SHEN Junyan<sup>1</sup>, Dr ZHAO Fuwang<sup>2</sup>, Dr Jason CHEUNG<sup>3</sup>, Prof. YICK Kit-lun<sup>2</sup>, Prof. TANG Hui<sup>1</sup>

<sup>1</sup>Department of Mechanical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>School of Fashion and Textiles, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

## **RISP 09 - Understanding the body odor in sportswear**

Ms LIU Rong<sup>1</sup>, Prof. LI LI<sup>1</sup>, Prof. LEE Shun-cheng<sup>2</sup>, Prof. WANG Xungai<sup>1</sup>

<sup>1</sup>School of Fashion and Textiles, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Civil and Environmental Engineering, The Hong Kong Polytechnic University, Hong Kong

## **RISP 10 - Continuous Sweat Lactate Measurement with On-Skin Graphene Biosensor**

Dr Thomas Ming Hung LEE, Ms LIU Lejian

Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

## **RISP 11 - Cuff-free and Noninvasive Optical System for Continuous Blood Pressure Monitoring: Some Preliminary Results**

Mr ZHENG Yuandong<sup>1,2</sup>, Dr LAI Puxiang<sup>1,2</sup>

<sup>1</sup>Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Institute for Sports Science and Technology, The Hong Kong Polytechnic University, Hong Kong

**RISP 12 - Hybrid Metasurface based Photoelectric Interface with Enhanced Electric Field for Enhancing Bone Regeneration**

Mr ZHOU Fu, Mr Willis Kwun Hei HO, Miss FAN Yadi, Miss SHI Jingyu, Miss GU Yutian, Prof. YANG Mo  
Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

**RISP 13 - Evaluation of Symmetry Index for Elite Backstroke Swimmer using Surface Electromyography: A Case Study**

Miss KWOK Wan Yu, Mr Raymond Ho Lun MAK, Mr Daniel Hon Ting TSE, Prof. NG Sheung Mei, Dr SO Chun Lung  
Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

**RISP 14 - Bone cell responses to mechanical stimulations require a Cl<sup>-</sup> channel gene**

Miss DU Wanting, Dr HU Peijie, Dr CHEN Junjiang, Dr RUAN Yechun  
Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong



# Theme: SHARP Vision

Thursday, 11 May 2023

Venue: HJ303

Chairs: Prof. Benny CHEUNG and Prof. KEE Chea-su

## 09:00-09:50 Keynote

**DISC Technology: From Research to Commercial Products**

Mr Jackson LEUNG

Director of Vision Science and Technology Co. Ltd.

## 09:50-10:10 Technical Presentation

**Ultra-precision Machining Technology with Applications in Optometry Industry**

Prof. Benny CHEUNG

Associate Director of Research Centre for SHARP Vision;  
Chair Professor of Ultra-precision Machining and Metrology, Department of Industrial and Systems Engineering; Director of SKL-UPMT, The Hong Kong Polytechnic University, Hong Kong

## 10:20-11:00 Coffee (Room: BC201)

## 11:10-11:30 Technical Presentation

**Corneal Topographer**

Prof. KEE Chea-su

Interim Director of Research Centre for SHARP Vision;  
Interim Head and Professor, School of Optometry,  
The Hong Kong Polytechnic University, Hong Kong

## 11:30-11:50 Technical Presentation

**How Health Economics Can Improve Patient Care**

Dr Tina LIAN

Assistant Professor, School of Optometry, The Hong Kong Polytechnic University, Hong Kong

### **11:50-12:10 Technical Session**

#### **A Photoactive Antimicrobial Hydrogel bandage for Bacterial Keratitis**

Dr Joseph CHAN

Assistant Professor, Department of Ophthalmology,  
The University of Hong Kong

### **12:10-12:25 Panel Discussion**

#### **Moderator:**

Prof. Benny CHEUNG

#### **Panellists:**

Mr Jackson LEUNG

Prof. KEE Chea-su

Dr Tina LIAN

Dr Joseph CHAN

## **Theme: SHARP Vision**

**Thursday, 11 May 2023**

**Time: 10:20-11:00**

**Venue: BC201**

### **Poster Presentations**

#### **RCSV 01 - Orientation Specificity of Contrast Sensitivity Adaptation to Astigmatic Blur: Transient Astigmatism Adaptation Reduces Meridional Anisotropy**

LEUNG Tsz-Wing<sup>1,2,3</sup>, Roger W. LI<sup>4</sup>, KEE Chea-su<sup>1,2,3</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Centre for SHARP Vision (RCSV), The Hong Kong Polytechnic University, Kowloon, Hong Kong

<sup>3</sup>Centre for Eye and Vision Research Limited, Hong Kong

<sup>4</sup>College of Optometry, Nova Southeastern University, Fort Lauderdale, Florida, USA

**RCSV 02 - Explore the possibility of Enhancing Outflow Facility by the Activation of Autophagy through mTOR-independent Pathway.**

Miss LING Choi-ying<sup>1</sup>, Miss LI Hoi-lam<sup>1,2</sup>, Dr Samantha S.W. SHAN<sup>1,2,3,4</sup>, Dr DO Chi-wai<sup>1,2,3,4</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University of Hong Kong, Hong Kong

<sup>2</sup>Centre for Eye and Vision Research, Hong Kong

<sup>3</sup>Research Centre for SHARP Vision, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong

**RCSV 03 - Does microRNA involve in ROCK inhibitor effect on primary human trabecular meshwork cells?**

Miss LING Choi-ying<sup>1</sup>, Dr DO Chi Wai<sup>1,2,3,4</sup>, Dr Samantha SW SHAN<sup>1,2,3,4</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Centre for Eye and Vision Research, Hong Kong.

<sup>3</sup>Research Centre for SHARP Vision, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong

**RCSV 04 - Performance of two smartphone models in detecting low and high myopia**

Miss KIU Ling Yau<sup>1</sup>, Miss KWOK Oi Lam<sup>1</sup>, Mr LEUNG Ho Cheung<sup>1</sup>, Dr Paul LEE<sup>2</sup>, Dr Grace NGAI<sup>1</sup>, Dr LEONG Hong Va<sup>1</sup>, Dr Lily YL CHAN<sup>1</sup>, Dr DO Chi Wai<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>University of Southampton, Southampton, United Kingdom

**RCSV 05 - Prevalence of Dry Eye Disease in Aquatic Sports Players** Mr Ming Hong Ernie WONG<sup>1</sup>, Mr Yu Him Anson LAM<sup>1</sup>, Ms Zoe YAU<sup>1</sup>, Ms LYU Anqi<sup>1</sup>, Dr Allen MY CHEONG<sup>1,2</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Centre for SHARP Vision, The Hong Kong Polytechnic University, Hong Kong

### **RCSV 06 - A novel method for assessing the gait function in visually impaired patients**

Miss PENG Yihong<sup>1</sup>, Dr CHEONG Ming Yan<sup>1,2</sup>, Dr Stanley WINER<sup>3</sup>, Ms Mable TONG<sup>1</sup>, Ms Venus SUEN<sup>1</sup>, Mr CHEUNG Man<sup>3</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Research Centre for SHARP Vision, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hong Kong

### **RCSV 07- Obstacle Detection for Independent Navigation in Augmented Reality**

Wang Jiaqing<sup>1</sup>, Nadim ZARO<sup>2</sup>, Cedric YIU Ka Fai<sup>3</sup>, Allen MY CHEONG<sup>1,4</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup> Centre for Eye and Vision Research, Hong Kong

<sup>3</sup> Department of Applied Mathematics, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup> Research Centre for SHARP Vision, The Hong Kong Polytechnic University, Hong Kong

### **RCSV 08 - Self-supervised denoising of optical coherence tomography with inter-frame representation**

LIU Zhengji<sup>1</sup>, LAW Tsz-kin<sup>1</sup>, LI Jizhou<sup>2</sup>, TO Chi-Ho<sup>1,3,4</sup> and Rachel Ka-Man Chun<sup>1,3,4</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>School of Data Science, City University of Hong Kong, Hong Kong

<sup>3</sup>Centre for Eye and Vision Research, Hong Kong

<sup>4</sup>Research Centre for SHARP Vision, The Hong Kong Polytechnic University, Hong Kong

### **RCSV 09 - Vision Field Estimation in High Myopia using Fundus Photographs**

Mr LIANG Dong<sup>1</sup>, Mr YAN Zipei<sup>2</sup>, Miss LIN Jiachun<sup>1</sup>, Dr XU Linchuan<sup>2</sup>, Prof. KEE Chea-su<sup>1,3,4</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Department of Computing, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Research Centre for SHARP Vision, The Hong Kong Polytechnic University, Hong Kong.

<sup>4</sup>Centre for Eye and Vision Research, Hong Kong

**RCSV 10 - ROCK inhibitor upregulates autophagy gene expressions in human ARPE-19 cells and the possible role of Thrombospondin-1 in autophagy**

Ms TSE Choi Yee<sup>1</sup>, Dr Samantha SHAN<sup>1,2,3,4</sup>, Dr Dennis TSE<sup>1,2,3</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University of Hong Kong, Hong Kong

<sup>2</sup>Centre for Eye and Vision Research, Hong Kong

<sup>3</sup>Research Centre for SHARP Vision, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong

**RCSV 11 - The effects of ROCK inhibitor, Y-39983 on cell morphology and autophagy marker expression in ARPE cells**

LO Hoi Kiu<sup>1</sup>, NG Ming Wai<sup>1</sup>, and CHAU Suet Ha<sup>1</sup>, LING Choi Ying<sup>1</sup>, Samantha SW SHAN<sup>1,2,3,4</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Centre for Eye and Vision Research, Hong Kong

<sup>3</sup>Research Centre for SHARP Vision, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Research Centre for Chinese Medicine Innovation, The Hong Kong Polytechnic University, Hong Kong

**RCSV 12 - Effect of acute intraocular pressure elevation on mouse retinal Alpha retinal ganglion cells**

Miss ZHANG Ting<sup>1,2</sup>, Mr SO Chung Him<sup>1</sup>, Dr PAN Feng<sup>1</sup>

<sup>1</sup>School of Optometry, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Centre for Eye and Vision Research, Hong Kong

# Theme: Photonics

Thursday, 11 May 2023

Venue: HJ304

Chair: Prof. JIN Wei

## 09:00 - 09:50 Keynote

**Light amplification and sensing in hollow core fibres**

Prof. Luc THÉVENAZ

Professor, Head of the EPFL Group for Fibre Optics,  
Switzerland

Member of the Swiss Academy of Science

## 09:50 - 10:10 Technical Presentation

**Non-wearable non-invasive smart health monitoring system based on optical fiber interferometer with machine learning**

Prof. YU Changyuan

Professor, Department of Electronic and Information Engineering, The Hong Kong Polytechnic University, Hong Kong

Optica Fellow

## 10:10-10:40 Coffee (Room: HJ202)

Chair: Prof. Daniel LAU Shu Ping

## 10:40 - 11:30 Keynote

**Radiative properties of Black Silicon revisited in the Mid-infrared and applications**

Prof. Tarik BOUROUINA

Professor in Physics, Université Gustave Eiffel, France

## 11:30 - 11:50 Technical Presentation

**High-resolution optical focusing, imaging, stimulation, and encryption with scattered light**

Dr LAI Puxiang

Associate Professor, Department of Biomedical Engineering, The Hong Kong Polytechnic University, Hong Kong

## **11:50-13:30 Lunch Break**

**Chair: Prof. YU Changyuan**

## **13:30 - 14:00 Technical Presentation**

### **3D nanoprinted optical fiber sensors**

Prof. LIAO Changrui

Distinguished professor in College of Physics and Optoelectronic Engineering, Shenzhen University  
Deputy Director of Guangdong and Hong Kong Joint Research Center for Optical Fiber Sensors  
Director of Shenzhen Key Laboratory of Ultrafast Laser Micro and Nano Manufacturing

## **14:00 - 14:30 Technical Presentation**

### **Operando battery monitoring using lab-on-fibre optical sensing technologies**

Prof. GUO Tuan

Professor and Director of the Lab for Photonics Sensing for Energy & Biology, Jinan University, China

## **14:30 - 14:50 Technical Presentation**

### **Dynamic and self-aware Optical Communications and Networks**

Prof. Alan LAU Pak Tao

Professor, Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong

## **Theme: Photonics**

**Thursday, 11 May 2023**

**Time: 10:10-10:40, 15:50-17:30**

**Venue: HJ202**

## **Poster Presentations**

### **PRI 01 - Ultrafast Spectroscopy: Unravelling Design Rules for Simple yet Highly-Efficient Organic Solar Cells**

Mr Top Archie Dela PEÑA<sup>1,2</sup>, Prof. LI Mingjie<sup>1</sup>, Prof. LI

Gang<sup>3</sup>, Prof. WU Jiaying<sup>2</sup>, Dr MA Ruijie<sup>3</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong University of Science and Technology, Function Hub, Advanced Materials Thrust, Guangzhou, China

<sup>3</sup>The Hong Kong Polytechnic University, Hong Kong

## **PRI 02 - Photocatalytic Regeneration of Nicotinamide Cofactor in a Microfluidic Reactor**

Miss XIE Fengjia<sup>1,2</sup>, Dr ZHU Yujiao<sup>1,3</sup>, Mr TSOI Chi

Chung<sup>1,2</sup>, Dr JIA Huaping<sup>1,2</sup>, Prof. ZHANG Xuming<sup>1,2</sup>

<sup>1</sup>Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Photonics Research Institute, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>Department of Chemistry, Hong Kong Baptist University, Hong Kong

## **PRI 03 - 2-μm ultrafast fiber laser system with wavelength tunability, high pulse repetition rate, and high laser power**

Mr SHANG Jingcheng<sup>1,2</sup>, Prof. HUANG Dongmei<sup>1</sup>, Prof. FENG Tianli<sup>3</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Shandong University, Qingdao, China

## **PRI 04 - Dual-comb generation in coupled nonlinear microcavities by tuning the coupling**

Dr CHENG Zihao<sup>1,2</sup>, Dr HUANG Dongmei<sup>2,3</sup>, Prof. P. K. A. WAI<sup>1,2,4</sup>

<sup>1</sup>Photonics Research Centre, Department of Electronic and Information Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>3</sup>Photonics Research Centre, Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>4</sup>Department of Physics, Hong Kong Baptist University, Hong Kong



**PRI 05 - E-band Fourier domain mode locked laser and its application in optical coherence tomography**

Mr SHI Yihuan<sup>1,2</sup>, Dr HUANG Dongmei<sup>1,2</sup>, Prof. P. K. A. WAI<sup>2,3,4</sup>

<sup>1</sup>Photonics Research Institute, Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>3</sup>Photonics Research Institute, Department of Electronic and Information Engineering, Hong Kong, Hong Kong

<sup>4</sup>Department of Physics, Hong Kong Baptist University, Hong Kong

**PRI 06 - Edge-Orientation Dependent Nanoimaging of Mid-Infrared Waveguide Modes in High-Index PtSe<sub>2</sub>**

Mr WONG Kin Ping<sup>1</sup>, Prof. LAU Shu Ping<sup>1</sup>, Dr LO Tsz Wing<sup>2</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>King's College London, London, United Kingdom

**PRI 07 - Enhancing Efficiency of Quasi-2D Perovskite Light-Emitting Diodes through Anti-Solvent Treatment-Induced Phases Modulation**

Dr ZHUANG Lyuchao, Dr WEI Qi, Dr LI Mingjie, Prof. LAU Shuping

The Hong Kong Polytechnic University, Hong Kong

**PRI 08 - Optical fiber sensor-assisted cochlear implantation for hearing loss preservation**

Dr CUI Jingxian<sup>1</sup>, Dr Dinusha Serandi GUNAWARDENA<sup>1</sup>, Dr CHENG Xin<sup>1</sup>, Dr Bernard CHEN<sup>2</sup>, Prof. Denny OETOMO<sup>3</sup>, Prof. Stephen O'LEARY<sup>2</sup>, Prof. TAM Hwa-Yaw<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>University of Melbourne and the Royal Victorian Eye and Ear Hospital, Melbourne, Australia

<sup>3</sup>University of Melbourne, Melbourne, Australia

## **PRI 09 - Photocatalytic Ozonation for Seawater Decontamination**

Mr TSOI Chi Chung, Prof. ZHANG Xu Ming

The Hong Kong Polytechnic University, Hong Kong

## **PRI 10 - Learn from butterfly's eyes**

Mr JIANG Heng<sup>1</sup>, Mr LAU Cheuk Lun<sup>1</sup>, Prof. ZHANG Xuming<sup>2</sup>

<sup>1</sup>Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong, China

<sup>2</sup>Photonics Research Institute, The Hong Kong Polytechnic University, Hong Kong, China

## **PRI 11 - Chiral Halide Perovskite/SWNT**

### **Heterojunction for Circular Polarization Sensing**

Dr LIU Qi, Dr LI Mingjie

The Hong Kong Polytechnic University, Hong Kong

## **PRI 12 - Mid-infrared optical frequency comb**

**generation based on MgF<sub>2</sub> crystalline resonators** Dr WU Wei<sup>1,2</sup>, Dr HUANG Dongmei<sup>1,2</sup>, Prof. P. K. A. WAI<sup>2,3</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>3</sup>Hong Kong Baptist University, Hong Kong

## **PRI 13 - Measurement of the attosecond-level timing jitter in the time stretched self-coherent detection system**

Dr LI Yujia<sup>1,2</sup>, Dr HUANG Dongmei<sup>1,3</sup>, Prof. P. K. A. WAI<sup>3,4,5</sup>

<sup>1</sup>Photonics Research Institute, Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>3</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, China

<sup>4</sup>Photonics Research Institute, Department of Electronic and Information Engineering, Hong Kong, China

<sup>5</sup>Department of Physics, Hong Kong Baptist University, Hong Kong

**PRI 14 - Tunable highly oscillatory optical resonances across visible light based on all-dielectric resonant metasurfaces**

Mr ZHOU Luwei, Dr LI Mingjie

Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong

**PRI 15 - Fiber-optic Lead Ion Sensor using PCF based Modal Interferometer**

Dr Abdullah Al NOMAN, Dr XIN Cheng, Dr Jitendra

Narayan DASH, Prof. YU Changyuan

The Hong Kong Polytechnic University, Hong Kong

**PRI 16 - Simultaneous Measurement of Axial Strain and Temperature Based on Twin-core Single-hole Fiber with Optical Vernier effect**

Mr LI Yujian, Prof. YU Changyuan

The Hong Kong Polytechnic University, Hong Kong

**PRI 17 - 2D Ternary Material as Saturable Absorber for NIR Mode-locked Laser**

Ms Sumaiya Umme HANI<sup>1,2</sup>, Dr Safayet AHMED<sup>1,2</sup>, Mr Tawsif Ibne ALAM<sup>1,2</sup>, Dr Ahmed Mortuza SALEQUE<sup>1,2</sup>, Mr Md. Nahian Al Subri IVAN<sup>1,2</sup>, Dr CHENG Ping Kwong<sup>1,2</sup>, Dr TSANG Yuen Hong<sup>1,2</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Shenzhen Research Institute, Shenzhen, China

**PRI 18 - Agricultural Waste Derived Self-Regenerating Solar Evaporator for Seawater Desalination**

Mr Md. Nahian Al Subri IVAN, Dr Ahmed Mortuza

SALEQUE, Dr TSANG Yuen Hong

The Hong Kong Polytechnic University, Hong Kong

**PRI 19 - Plasmonic bound states in the continuum for unpolarized tightly focused light**

Dr WANG Zhuo<sup>1</sup>, Dr LIANG Yao<sup>2</sup>, Miss QU Jiaqi<sup>1</sup>, Dr CHEN Mu Ku<sup>2</sup>, Mr CUI Mingjie<sup>1</sup>, Mr CHENG Zhi<sup>1</sup>, Mr ZHANG Jingcheng<sup>2</sup>, Dr Jin YAO<sup>2</sup>, Mr CHEN Shufan<sup>2</sup>, Prof. TSAI Din Ping<sup>2</sup>, Prof. YU Changyuan<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>City University of Hong Kong, Hong Kong

## **PRI 20 - A Dual-wavelength Metasurface beam splitter**

Mr CHENG Zhi<sup>1</sup>, Ms QU Jiaqi<sup>1</sup>, Prof. YU Changyuan<sup>1,2</sup>

<sup>1</sup>Photonics Research Centre, Department of Electronic and Information Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Shenzhen Research Institute, The Hong Kong Polytechnic University, Shenzhen, China

## **PRI 21 - Near-Infrared Plasmonic Effect Induced Enhanced Water Splitting of MoS<sub>2</sub> Nanosheets**

Dr JIA Huaping

The Hong Kong Polytechnic University, Hong Kong

## **PRI 22 - Microstructured optical fiber-enhanced photothermal spectroscopy for trace gas detection**

Dr ZHAO Pengcheng<sup>1</sup>, Dr ZHAO Yan<sup>1</sup>, Dr BAO Haihong<sup>1</sup>, Dr HO Hoi Lut<sup>1</sup>, Prof. FAN Shangchun<sup>2</sup>, Dr GAO Shoufei<sup>3</sup>, Prof. WANG Yingying<sup>3</sup>, Prof. JIN Wei<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong.

<sup>2</sup>Beihang University, Beijing, China

<sup>3</sup>Jinan University, Guangzhou, China

## **PRI 23 - Broadband hollow-core optical fiber phase modulators with low insertion loss and fast response**

Mr GUO Linhao<sup>1</sup>, Dr JIANG Shoulin<sup>2</sup>, Mr CHEN Feifan<sup>1</sup>, Dr ZHAO Yan<sup>1</sup>, Dr ZHAO Shuangxiang<sup>1</sup>, Prof. GAO Shoufei<sup>3</sup>, Prof. WANG Yingying<sup>3</sup>, Dr HO Hoi Lut<sup>1</sup>, Prof. JIN Wei<sup>1</sup>

<sup>1</sup>The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>The Hong Kong Polytechnic University Shenzhen Research Institute, Shenzhen, China

<sup>3</sup>Jinan University, Guangzhou, China

## **PRI 24 - Twelve-channel detection of spin and orbital angular momenta via dielectric metasurface**

Miss QU Jiaqi<sup>1</sup>, Dr WANG Zhuo<sup>2</sup>, Mr CHENG Zhi<sup>1</sup>

<sup>1</sup>Photonics Research Institute, Department of Electronic and Information Engineering, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Photonics Research Institute, Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong

## **PRI 25 - Low temperature Corning Gorilla Glass direct bonding**

Mr DU Yu<sup>1,2,3</sup>, Prof. ZHANG Xuming<sup>1,2</sup>, Prof. WANG Chenxi<sup>3</sup>

<sup>1</sup>Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong

<sup>2</sup>Photonics Research Institute, The Hong Kong Polytechnic University, Hong Kong

<sup>3</sup>State Key Laboratory of Advanced Welding and Joining, Harbin Institute of Technology, Harbin, China

## **Theme: Photonics**

**Thursday, 11 May 2023**

**Time: 14:50-15:50**

**Assemble Point: HJ202**

### **Lab Visit**

**Photonic Sensors Research Laboratory**

**Femtosecond Laser Laboratory**

**PolyU-Huawei Joint Laboratory**

**Fiber Sensors and Instrumentation Laboratory**

# Plenary and Keynote Speakers

## Plenary Session

**Monday, 8 May 2023**

**Time: 16:00-17:30**

**Venue: V322**

## Plenary Speaker

**Targeting Na<sub>v</sub> Channels for  
Pain Relief**

**Prof. YAN Nieng**

Founding President,  
Shenzhen Medical Academy  
of Research and Translation  
(SMART), Shenzhen, China



### Abstract

Voltage-gated sodium (Na<sub>v</sub>) channels are responsible for the initiation and propagation of action potentials. Associated with a variety of disorders, Na<sub>v</sub> channels are targeted by a variety of FDA-approved drugs and natural toxins. Employing the modern methods of cryo-EM, we determined high resolution structures of a number of eukaryotic and eventually human Na<sub>v</sub> channels in complex with auxiliary subunits, toxins, and drugs, which reveal the mode of action of representative Na<sub>v</sub> modulators. Based on the structural discovery, we suggest a “door-wedge” allosteric blocking mechanism for fast inactivation of Na<sub>v</sub> channels. Structural comparison of the conformationally distinct Na<sub>v</sub> channels provides important insights into the electromechanical coupling mechanism of Na<sub>v</sub> channels, offers the 3D template to map hundreds of disease mutations, and will aid rational design of next-generation pain killers.

## Biography

YAN Nieng received her Bachelor's Degree from the Department of Biological Science and Technology at Tsinghua University in 2000 and Ph.D. from the Department of Molecular Biology at Princeton University in 2004, where she continued her postdoctoral research. She joined School of Medicine, Tsinghua University as a professor in 2007. Ten years later, in 2017, she was recruited back by Princeton University and became the inaugural Shirley M. Tilghman Professor of Molecular Biology. In 2022, Yan Nieng served as the Founding President of Shenzhen Medical Academy of Research & Translation (SMART).

Yan Nieng's primary research interest has been in the structural and mechanistic investigation of membrane transport proteins that are of tremendous physiological, pathophysiological, and pharmaceutical significance. She reported the first structures of the human glucose transporters GLUT1 and GLUT3, the eukaryotic voltage-gated sodium and calcium channels, and a number of proteins involved in sterol metabolism. Her present research program focuses on structure-guided mechanistic understanding and drug discovery for pain relief.

Her achievements have won her numerous accolades, including the 2015 Beverley & Raymond Sackler International Prize in Biophysics, the 2019 Weizmann Women & Science Award, and the 2021 Anatrache Membrane Protein Award by the Biophysical Society. She was elected as an International Member of the US National Academy of Sciences in 2019 and an International Honorary Member of the American Academy of Arts and Sciences in 2021.

## Theme: Nexus Journal

**Tuesday, 9 May 2023**

**Time: 10:00-11:00**

**Venue: M1603**

### Keynote Speaker

**Scientific publishing on  
interdisciplinary research**

**Dr John PHAM**

Editor-in-chief of Cell,  
Cambridge, MA, USA



### Biography

John is the editor-in-chief of Cell. He received his training in molecular biology, and was the editor-in-chief of Molecular Cell prior to joining the Cell editorial team. He likes learning new science, being helpful, and experimenting with new ways to do things. He also likes running, climbing stairs, tending to his plants, cooking, cocktails while cooking, and hanging out with his partner and their dogs.



# Theme: Nexus Journal

Tuesday, 9 May 2023

Time: 11:00-12:00

Venue: M1603

## Keynote Speaker

**Science and technology  
developed from failures**

**Prof. TU Shantung**

Member of Chinese Academy  
of Engineering, Professor of  
the East China University of  
Science and Technology,  
Shanghai, China



### Abstract

The success of human civilization has been largely attributed to the wisdom gained from the failures. The technology breakthrough in the use of steam energy is a typical example of learning process from the failures, which sparked the first industry revolution. Similarly, the science of fracture mechanics has been developed from lessons learned through numerous engineering failure cases. Based on this philosophy, we advocate for a concept called Reliability centred manufacturing, which is an iterative innovation process that begins and ends with failure studies. It calls for the effort of collaboration of all stakeholders and cooperative learning from failures.

The lecture also highlights the limitation of our human society that consider the failure as a shameful event. This suggests the intelligentization of human society as a complex system is a long-term challenge.

### Biography

Shan-Tung Tu received his B.Eng degree in 1982 and Ph.D degree in 1988 from Nanjing Tech University. He

is a Chair professor of Mechanical Engineering, East China University of Science and Technology. Prior to this, he has worked in Nanjing Tech University and East China University of Science and Technology as a professor and vice president, and a guest scientist to Royal Institute of Technology, Sweden. He was elected as an academician of China Academy of Engineering in 2019.

Driven by the safety concern of the process and energy equipment, Professor Tu has been trying to develop knowledge in the area of high temperature engineering, including thermal effect, structural integrity assessment and design of high temperature equipment against failures. He is an author of more than 400 papers and received a number of distinguished awards, including China National Science and Technology Progress Award, National Technology Invention Award, China Youth Science and Technology Award, ASME Best Paper Award and so on. He has been a fellow of The Chemical Industry and Engineering Society of China (since 2020), the honorary president of Chinese Pressure Vessel Institution (since 2010) and the honorary president of Chinese Materials Institution (since 2015) of China Mechanical Engineering Society, Chairman of China Structural Integrity Consortium, Chairman of Asian Oceanic Regional Committee of International Council for Pressure Vessel Technology, and a member of reliability committee of IFToMM.

He is currently an honorary professor of the University of Nottingham. He is also serving as an associate editor or editorial board member for a number of journals, including Frontiers of Chemical Sciences and Engineering, Int J Pres Ves and Piping, Applied Energy, J of Materials Science and Technology, and so on.

## Theme: Nexus Journal

Tuesday, 9 May 2023

Time: 14:00-15:00

Venue: M1603

### Keynote Speaker (Online)

**The importance of research  
across disciplines and  
national boundaries for  
global sustainability**

**Prof. CHEN Deliang**

Member of the Royal Swedish  
Academy of Sciences and  
August Röhss Chair in Physical  
Geography, University of  
Gothenburg, Sweden



### Biography

Deliang Chen is a professor in Physical Meteorology and the prestigious August Röhss Chair in Physical Geography towards Geoinformatics at the University of Gothenburg. His research includes Earth System Science and global environmental change, climate dynamics and modeling, and atmospheric circulation. He focuses on recent and future regional climate changes and their impacts on water, ecosystem, environment, and agriculture. Currently, he focuses on climate and environmental changes over the Third Pole (Tibetan Plateau) region. He is an elected member of six academies including the Royal Swedish Academy of Sciences and the Chinese Academy of Sciences. He is a leader in science. Previous appointments include Director of the Gothenburg Atmospheric Science Center and Executive Director of International Council for Science (ICSU). He also has served on numerous international and national committees and boards.

Recent examples include Chair of the Nomination Committee of the Stockholm Water Prize and member of the International Scientific Advisory Board of Stockholm Resilience Centre. He was a Coordinating Lead Author in Working Group I of the IPCC's sixth assessment report. Recently, he was awarded the H. M. The King's Medal for his outstanding contributions to climate research.

# Theme: Nexus Journal

Tuesday, 9 May 2023

Time: 15:00-16:00

Venue: M1603

## Keynote Speaker

**Using digital twinning to achieve systemic resilience and sustainability**

**Prof. Michael OBERSTEINER**

Director and Professor of the Environmental Change Institute, The University of Oxford, United Kingdom



## Abstract

Recent pandemic and geopolitical crises have highlighted the interconnected nature of risks and the potential for a single shock to impact global supply chains, infrastructure networks, financial systems, and human welfare. However, current approaches to risk management are inadequate for managing systemic risks, leaving countries and the international system unprepared for major, complex shocks. This can result in significant impacts on welfare, such as famine, loss of income and employment, epidemics, mass violence, or the loss of essential services.

The Oxford Martin Programme on Systemic Resilience seeks to address this challenge by advancing practical solutions to manage shocks that could result in major and prolonged economic disruption, severe human or economic impacts, and contagion. The programme brings together experts in biophysical modelling, risk analysis, transboundary resources and infrastructure, development, disaster preparedness, and economics to design early warning systems and identify cost-

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effective solutions for strengthening the resilience of socio-economic systems to systemic risks. The programme aims to create roadmaps and toolkits for local and global solutions to improve people's welfare and the resilience of systems and institutions upon which they depend.

## **Biography**

Michael Obersteiner is the Director of the Environmental Change Institute, University of Oxford. His research experience stretches from biophysical modelling in the areas of ecosystems, forestry and agriculture to economics, finance and integrated assessment, and he works across ECI's research themes.

Professor Obersteiner joins the institute from the International Institute for Applied Systems Analysis (IIASA), where he was the Director of the Ecosystems Services and Management (ESM) Program. He joined the IIASA Forestry Program in 1993 and has been leading and developing the ESM Program, which is currently the largest research program at IIASA, since 2011.

Professor Obersteiner's background includes the fields of global terrestrial ecosystems and economics, having completed graduate studies both in Austria (BOKU University and Institute for Advanced Studies Vienna) and abroad (Columbia University, New York and Siberian Branch of the Russian Academy of Sciences, Novosibirsk).

Under his leadership several national and international organizations, including inter alia the European Commission, WWF, OECD, and other national and international institutions have received science-based policy advice using quantitative modelling techniques. He is author of over 250 scientific papers and is a highly-cited researcher - ranking in the top 1% of citations in the Web of Science according to Clarivate.

## Theme: Land and Space

Tuesday, 9 May 2023

Time: 09:00-09:50

Venue: HJ303

### Keynote Speaker

#### **The Making of a Sustainable Hong Kong – Path of 20 Years Ahead**

**Prof. LING Kar-kan, SBS**

Director of Jockey Club  
Design Institute for Social  
Innovation (JC DISI)

Associate Directors of RILS  
and RISA, The Hong Kong  
Polytechnic University,  
Hong Kong



#### **Abstract**

The publication of the “Northern Metropolis Development Strategy” on 6 October 2021 and the “HK 2030+ Final Report” two days later on 8 October 2021 marked that Hong Kong has entered into a new wave of large-scale urbanisation and development of high-capacity infrastructure systems. The Northern Metropolis and the Kau Yi Chau Artificial Islands, together with steeping up of urban redevelopment in the old districts of the Harbour Metropolis will dominant the development scene of Hong Kong in the coming 20 years. This will be a challenging process aiming at carbon neutrality, biodiversity, making of vibrant and equitable communities, and fostering innovation and technology industry as Hong Kong’s second economic. The speaker will share his views on how academia may contribute in this process and lead the community with constructive public engagement

## **Biography**

Prof K. K. Ling is the Director of Jockey Club Design Institute for Social Innovation of The Hong Kong Polytechnic University.

He also serves the community as the Vice Chairman of the Hong Kong Housing Society, Director of the Hong Kong Cyberport Management Company Limited, and the Chairman of the Country and Marine Parks Board. He is also the Adjunct Professor of the University of Hong Kong and the Chinese University of Hong Kong, and Professor of Practice (Planning) of The Hong Kong Polytechnic University, and Associate Fellow of the University College of Estate Management, UK.

He was the Director of Planning of HKSAR Government and President of the Hong Kong Institute of Planners. He recently received the InnoStar Award 2021 from Our Hong Kong Foundation.



# Theme: Land and Space

Tuesday, 9 May 2023

Time: 13:30-14:10

Venue: HJ303

## Keynote Speaker

**Blue cities, building beyond  
the waterfront**

**Dr Koen OLTHUIS**

Founder, Waterstudio.NL,  
The Netherlands



### Abstract

Given the fact that about 90% of the world's largest cities are situated on the waterfront, we have arrived to a situation where we are forced to rethink the way we live with water in the built environment. Considering the unpredictability of future developments and unanticipated needs, we should come up with flexible strategies – planning for change. Our vision is that large-scale floating projects in an urban environment provide a tangible solution to these problems that is both flexible as well as sustainable.

### Biography

With his family roots in shipbuilding, architecture and engineering, Dr Koen Olthuis founded Waterstudio in 2003 as the first office 100% focused on floating architecture.

As a senior researcher Floating Cities and Delta Urbanism at the Delft University of Technology, he and his team is testing the strategies and options for The Netherlands to build on water as the next phase in the evolution of a country below sea level.

He advises governments and cities around the world on how to combat the effects of climate change and urbanisation. His signature work includes the Floating City in The Maldives, as well as floating parks, houses and theatre for canals, lakes and the open ocean. Koen is the author of the book FLOAT! and City Apps, which highlight the possibilities for rich and poor communities and to build on water to improve the performance of cities near water.

# Theme: Chinese Medicine Innovation

Tuesday, 9 May 2023

Time: 09:10-10:00

Venue: FJ301

## Keynote Speaker

**Acupuncture clinical research  
and its impact in the USA**

**Prof. LAO Lixing**

President and Professor  
Virginia University of  
Integrative Medicine, USA



## Abstract

Since the 1970's, acupuncture has become popular in the United States. There are three milestones reflecting the development of acupuncture in USA: 1) 1974: Federal Drug and administration (FDA) labeled acupuncture as an "Investigational Device" (Class II), 2) 1996: FDA reclassified acupuncture needle as "Medical Device" (Class III), and 3) 1997: National Institutes of Health (NIH) held the Consensus Development Conference on Acupuncture.

To achieve the goal that acupuncture can be accepted by the mainstream medical system and be incorporated into the healthcare system, evidence-based clinical research becomes crucially important. Since 1997 after the NIH consensus conference on acupuncture, the funding for supporting acupuncture research by the NIH has dramatically increased. Over 5000 randomized controlled trials, meta-analyses, and systematic reviews have been published in English journals.

Because mounting evidence demonstrates the efficacy, effectiveness, and cost-effectiveness of acupuncture, more hospitals, and health insurance companies including the federal Medicare program have adopted acupuncture into their service. Over 50 schools and universities that provide acupuncture education, training, and clinical service have been accredited by the national accreditation commission. In addition to acupuncturists, physicians and physical therapists have adopted acupuncture into their practice. Furthermore, over 40 conventional medical guidelines recommend acupuncture as one of the treatment options.

## **Biography**

Professor Lixing Lao, Ph.D., Professor and President, Virginia University of Integrative Medicine (VUIM), Fairfax, Virginia, USA. Prior to his position at VUIM, he was a professor and the Director of the School of Chinese Medicine, The University of Hong Kong holding Vivian Taaam Wong Endowed Professorship in Integrative Medicine during 2013-2019. He is elected vice president of the World Federation of Acupuncture and Moxibustion Societies (WFAS). He was an appointed Secretary General of the Consortium for Globalization of Chinese Medicine (CGCM) which is based in the University of Hong Kong (2013-2019). He was a Professor of Family Medicine and the Director of the Traditional Chinese Medicine Research Program in the Center for Integrative Medicine of the School of Medicine, University of Maryland, Baltimore (UMB), USA until 2013.

Prof Lao graduated from the Shanghai University of Traditional Chinese Medicine (TCM) in 1983 and completed his Ph.D. in physiology at UMB in 1992. As a licensed acupuncturist and Chinese medicine practitioner, Prof Lao has practiced acupuncture and Chinese herbal medicines for over 30 years and served as a Board member for five years on the Maryland State Board of Acupuncture.

He is the principal investigator and co-investigator of over 20 clinical trials and pre-clinical studies in acupuncture and Chinese herbal medicines funded by the National Institutes of Health (NIH), Department of Defense (DoD), USA and Medical and Health Research Fund (MHRF) in Hong Kong. He is particularly interested in conducting translational research that bridges basic science, clinical trials, and "real world" acupuncture/Chinese medicine clinical practice. He established the laboratory of TCM research in UMB in 1999 to conduct basic science studies on acupuncture and Chinese herbal medicines. Widely recognized for his unique contributions to acupuncture/TCM research methodology, he publishes and lectures extensively in this field. He has actively published 300 peer-reviewed scientific papers and 19 book chapters or books. He has also given over 300 presentations at national and international conferences/symposia.

Prof Lao is a board member of the Society for Acupuncture Research and served as a co-president of the Society for five years (2003-2007). He served a member of PDQ Cancer CAM Advisory Board, the National Cancer Institute (NCI), National Institutes of Health (NIH). He also served on editorial boards in a number of journals including associate editor in the Journal of Alternative and Complementary Medicine and the Journal of Alternative Therapies in Health and Medicine. He is currently the Editor-in-Chief in the Journal of Integrative Medicine. He was awarded a Qi-Huang International Award by China Association of Chinese Medicine in December 2015 and awarded the Chief Executive's Commendation for Community Service in recognition of his contribution to the development of Chinese medicine in Hong Kong by the Government of the Hong Kong Special Administrative Region (SAR), China in July 2019.

# Theme: Chinese Medicine Innovation

Tuesday, 9 May 2023

Time: 11:20-12:10

Venue: FJ301

## Keynote Speaker

### Recent Advance of Regeneration of Optic Nerve in Animals

**Prof. SO Kwok-fai**

Chair Professor,  
Department of  
Ophthalmology,  
The University of Hong  
Kong, Hong Kong



### Abstract

Optic nerve in mammals including human is part of the central nervous system and cannot be regenerated after damage. It leads to visual loss and there is a great need to find a method to promote optic nerve regeneration that can be used in clinical setting. In this study, we showed clear evidence that, in rats, CNTF-chitosan (ciliary neurotropic factor-chitosan) provided a favourable microenvironment to promote long-distance axonal regeneration of RGCs (retinal ganglion cells). The nascent axons re-established contact with the visual nuclei in the brain and partially restored the visual functions. Moreover, some nascent RGCs axons, including some from M-RGCs, regenerated over long distances. In summary, the adult mammalian visual system could be partially reconstructed with the help of CNTF-chitosan after severe injury. The use of Wolfberry glycopeptide to protect RGCs will also be discussed in this talk.

## Biography

Prof. SO Kwok-fai is the Director of GHM Institute of CNS Regeneration at Jinan University, Guangzhou, China; Chair of Anatomy in the State Key Laboratory of Cognitive Sciences in the Faculty of Social Sciences and the Dept of Ophthalmology, Jessie Ho Professor in Neuroscience, The University of Hong Kong; member of the Chinese Academy of Sciences, Co-Chairman of the Board of Director of the China Spinal Cord Injury Network (ChinaSCINet), and Editor-in-Chief of *Neural Regeneration Research*.

Prof. SO received his PhD degree from Massachusetts Institute of Technology (MIT). As one of the pioneers in the field of axonal regeneration in visual system, he was the first to show lengthy regeneration of retinal ganglion cells in adult mammals with peripheral nerve graft. He is currently using multiple approaches to promote axonal regeneration after injury in the optic nerve and spinal cord. His team identifies neuroprotective and regenerative factors including: exercise, wolfberry, trophic factors, peptide nanofiber scaffold, and environmental manipulation.

Prof. So obtained the Natural Science Award of the National Natural Science Foundation of China in 1995 and was elected as the Member of the Chinese Academy of Sciences in 1999. In 2005, he was elected as the Fellow of the US National Academy of Inventors (FNAI), and was elected as a member of (Dana Alliance for Brain Initiatives (DABI) in 2017. Prof. So was elected as a fellow of the Chinese Academy of Medical Science in 2019.

He is the author and co-author of over 470+ publications as well as co-inventors of 46 patents.

# Theme: Artificial Intelligence of Things

Tuesday, 9 May 2023

Time: 9:15-9:55

Venue: GH201

## Keynote Speaker

### Data Driven Research for AIOT

#### Prof. LIU Yunhao

CJ Chair Professor, Dean of the Institute of Global Innovation Exchange, Tsinghua University, China



### Abstract

Over the last few years, the applications of artificial intelligence technology are becoming more and more approved by the society, as the number of people slowly warming up to the idea of including AI in our everyday lives increases. On the other hand, with the popularity of IoT (Internet of Things), the amount of data people need to analyze grows. The analysis of these data relies more on AI technology. As a bridge between the physical world and the digital world, IoT also provides new opportunities to apply to AI technology.

As a result, the birth of AIoT (artificial intelligence of things), the combination of AI and IoT, is inevitable. AIoT has unwittingly penetrated every aspect of human life, from small mobile applications and smart homes to large massive group analysis, city management, and policymaking. However, AIoT, like any other technological inventions, brings not only crucial and new opportunities but also challenging obstacles to human beings at the same time. Is AIoT our new Pandora's box?



# Theme: Artificial Intelligence of Things

Tuesday, 9 May 2023

Time: 9:55-10:35

Venue: GH201

## Keynote Speaker

**Twenty-five years of Lessons  
Learning in AgeTech: The  
Past and the Future**

**Prof. Alex MIHAILIDIS**

Professor, Department of  
Occupational Science and  
Occupational Therapy  
Barbara G. Stymiest Research  
Chair in Rehabilitation  
Technology – KITE  
Research Institute and  
University of Toronto, Canada



### Biography

Professor Mihailidis is the Associate Vice-President for International Partnerships at the University of Toronto, and the Scientific Director of the AGE-WELL Network of Centres of Excellence, which focuses on the development of new technologies and services for older adults. He is a Professor in the Department of Occupational Science and Occupational Therapy (U of T) and in Biomedical Engineering (U of T), with a cross appointment in the Department of Computer Science (U of T).

Professor Mihailidis has been conducting research in the field of technology to support older adults for the past 24 years, having published over 250 journal papers, conference papers, and abstracts in this field. Professor Mihailidis is also very active in the rehabilitation engineering profession, currently as the

Past-President for RESNA (Rehabilitation Engineering and Assistive Technology Society of North America). He was also named a Fellow of RESNA in 2014, which is one of the highest honours within this field of research and practice, and a Fellow in the Canadian Academy of Health Science (CAHS) in 2021 for his contributions to the health and well-being of older Canadians. In 2022, Professor Mihailidis was recognized by the UN as one of the Healthy Ageing 50 – 50 leaders working to transform the world to be a better place in which to grow older.

Professor Mihailidis received a B.A.Sc. in Mechanical Engineering from University of Toronto in 1996, a M.A.Sc. in Biomedical Engineering in 1998 from the University of Toronto, and a PhD in Bioengineering (Rehabilitation Engineering) in 2002 from the University of Strathclyde (Glasgow, Scotland).

# Theme: Artificial Intelligence of Things

Tuesday, 9 May 2023

Time: 11:00-11:40

Venue: GH201

## Keynote Speaker

**Enabling Clinical Information Processing: The Role of Edge Computing in Improving Patient Outcomes**

**Prof. Albert ZOMAYA**

Australian Research Council  
Professorial Fellow, Peter  
Nicol Russell Chair Professor  
University of Sydney,  
Australia



### Abstract

The healthcare industry increasingly relies on the analysis of clinical information to provide accurate and timely diagnoses and treatment plans for patients. However, traditional methods of processing and analyzing this information can be slow and resource-intensive, leading to delays in patient care and suboptimal outcomes. This is where edge computing comes in, providing a way to process and analyze clinical information at the point of care, improving the speed and accuracy of decision-making.

In this talk, we will explore how edge computing can break down barriers in clinical information processing, leading to improved patient outcomes. We will examine the healthcare industry's key challenges in clinical information processing and how edge computing can help overcome these challenges through faster data processing, increased data privacy

and security, and improved decision-making capabilities.

We will also explore how edge computing can be integrated with other emerging technologies, such as machine learning and the Internet of Things, to provide even greater benefits for patients and healthcare providers. Ultimately, this talk will provide valuable insights into how edge computing is transforming the healthcare industry and what it means for the future of patient care.

## **Biography**

Albert Y. ZOMAYA is Peter Nicol Russell Chair Professor of Computer Science and Director of the Centre for Distributed and High-Performance Computing at the University of Sydney. To date, he has published > 700 scientific papers and articles and is (co-)author/editor of >30 books. A sought-after speaker, he has delivered >250 keynote addresses, invited seminars, and media briefings. He is the past Editor in Chief of the IEEE Transactions on Computers (2010-2014) and the IEEE Transactions on Sustainable Computing (2016-2020).

Prof. Zomaya is a decorated scholar with numerous accolades including Fellowship of the IEEE, the American Association for the Advancement of Science, and the Institution of Engineering and Technology. Also, he is a Fellow of the Australian Academy of Science, Royal Society of New South Wales, Foreign Member of Academia Europaea, and Member of the European Academy of Sciences and Arts. Some of Prof. Zomaya recent awards include the Research Innovation Award, IEEE Technical Committee on Cloud Computing (2021), the Technical Achievement and Recognition Award, IEEE Communications Society's IoT, Ad Hoc and Sensor Networks Technical Committee (2022). Prof. Zomaya is a Clarivate 2022 Highly Cited Researcher, and his research interests lie in parallel and distributed computing, networking, and complex systems.

# Theme: Advanced Manufacturing

Tuesday, 9 May 2023

Time: 9:00-9:50

Venue: HJ305

## Keynote Speaker

**Sustainable manufacturing –  
current and future trends**

**Prof. Andrew NEE Yeh Ching**

Emeritus Professor of  
Department of Mechanical  
Engineering, National  
University of Singapore,  
Singapore



## Abstract

Manufacturing activities consume large amounts of energy and contribute heavily to the emission of greenhouse gases and global warming. Sustainable manufacturing is a concerted effort to reduce the emission of carbon dioxide at the various stages, from design to fabrication, use and disposal.

Manufacturing sustainability can be achieved using many golden “R” rules, starting from 3 increasing to 6: refuse, reduce, reuse, repurpose, recycle, repair. More recently, another important golden “R” rule has been added – Remanufacturing, which is an industrial process by which a previously sold, worn, or non-functional product can be rebuilt and function “like-new”.

In this presentation, Remanufacturing is the main theme to be addressed. Remanufacturing involves a highly complex series of operations such as logistics,

scheduling, disassembly, cleaning, repair, refurbishing, assembly and inspection. Remanufacturing operations can usually be described by the two S's: stochastic and sporadic.

Remanufacturing technology is becoming more popular as companies look towards combating the current climate change, and it also allows a company to reduce waste and environmental pollution. As a result, remanufacturing technology can greatly benefit the development of circular economy.

A remanufacturing plant receives used equipment in all conditions and it is impossible to automate the process, and traditionally, it has to rely on manual inspection and disassembly. This has been the practice until digital technologies have been deployed to allow AR-guided disassembly and assembly, intelligent planning of disassembly route, as well as the use of optimization software tools. This presentation will deliberate on the future trends of remanufacturing.

## **Biography**

Andrew Y C Nee is currently Professor Emeritus, Department of Mechanical Engineering, National University of Singapore. He received his PhD and DEng from University of Manchester in 1973 and 2002 respectively. He is Fellow CIRP (1990), Fellow SME (1990) and Fellow Academy of Engineering Singapore (2012). He was President of CIRP in 2012, and Gold Medal Recipient of SME in 2014. Awards include: IEEE Kayamori Award (1999), Norman A Dudley Award, International Journal of Production Research (2003), Joseph Whitworth Prize, the Institution of Mechanical Engineers (2009). He was elected Asia's top 100 Scientist, Asian Scientist Magazine, 2016. Research interests include: Tool, die and fixture design, augmented reality applications, digital twin, remanufacturing. He has graduated 53 PhD students, published over 500 papers and 25 books, GS citation of 25,100 and H-Index 78. He is Editor-in-Chief of International Journal of Advanced Manufacturing

Technology (Springer), and Executive Editor-in-Chief of Advances in Manufacturing (Shanghai and Springer), honorary professor of BUAA, NUAA, Shanghai, Tianjin, and HUST.

# Theme: Resources Engineering towards Carbon Neutrality

Wednesday, 10 May 2023

Time: 09:05-09:40

Venue: HJ302

## Keynote Speaker

**Mineralization of waste  
residues: Catalyzing a zero-  
carbon future for  
construction materials**

**Prof. LING Tung-chai**

Professor, College of Civil  
Engineering, Hunan  
University, China



### Abstract

Accelerated carbonation to mineralize industrial flue gas CO<sub>2</sub> is gaining increasing momentum for combating climate change. Industrial waste residues present in a large amount are an attractive avenue for the affective capture of CO<sub>2</sub>. This technology creates dual environmental benefits: simultaneously utilizing solid wastes and permanently storing CO<sub>2</sub>. More importantly, the industrial waste residues are usually located in the vicinity of the CO<sub>2</sub> source. In this presentation, different types of industrial wastes suitable for mineral carbon sequestration and the corresponding process routes will be introduced. As the main resulting product of the carbonation process, CaCO<sub>3</sub> has been proven to be particularly useful in the production of construction materials. The practical applications of upcycling the generated CaCO<sub>3</sub> in various types of construction products will also be discussed. Considering that the amount of CO<sub>2</sub> that can be consumed by mineralizing steel slag produced in China alone is estimated to be equal to the total



amount of current global CCUS capacity (63Mtpa), a wider application of accelerated mineral carbonation in developing sustainable construction products within the next decade is expected to substantially cut the greenhouse gas emissions from cement and concrete industry, which echoes a long-standing call for achieving the Net Zero Carbon Emission in the construction industry.

## **Biography**

Prof. Tung-Chai LING is a professor from Hunan University. His research interest focuses on the resource utilization of solid wastes and carbon sequestration technology in the field of construction materials. He has presided over 18 competitive research projects, including NSFC's Research Fund for International Senior Scientists. He has published over 140 SCI journal papers, garnering over 5,800 citations with a h-index of 44. He has been elected as a Fellow of the ASEAN Academy of Engineering and Technology (AAET) and serves as the associate editor of the ASCE Journal of Materials in Civil Engineering. He was awarded the "Robert L'Hermite Medal" by RILEM in 2020 (first scholar from a Chinese university to receive this prestigious medal since the inception of the medal in 1967).

## Theme: Smart Ageing

Wednesday, 10 May 2023

Time: 09:00-09:30

Venue: HJ305

### Keynote Speaker

**The role of AI in Eldercare:  
Examples, Lessons, and the  
Future**

**Prof. Alex MIHAILIDIS**

Professor, Department of  
Occupational Science and  
Occupational Therapy  
Barbara G. Stymiest Research  
Chair in Rehabilitation  
Technology – KITE  
Research Institute and  
University of Toronto, Canada



### Abstract

The field of AgeTech has been emerging for the past several decades, with the development of new technologies and approaches that can support older adults. These technologies range from simple devices and apps to more complex systems like smart homes and robotics. A key aspect in developing this field has been the establishment of consortiums and networks, like the AGE-WELL Network of Centres of Excellence in Canada. This presentation will discuss the area of AgeTech, where the field currently sits, and more importantly where the field is going. It will also present examples of technologies that are currently being developed by the AGE-WELL network and strategies that are being established in Canada to help move AgeTech innovations to the marketplace and into the hands of those people who need these solutions—older adults and their caregivers.

# Theme: Mental Health

Wednesday, 10 May 2023

Time: 09:00-09:45

Venue: HJ303

## Keynote Speaker

**Youth Mental Health in  
Hong Kong: Challenges and  
response during the  
pandemic years and beyond**

**Prof. Eric CHEN Yu Hai**

Chi-Li Pao Foundation

Professor in Psychiatry

Chair Professor

Clinical Professor

Director of Psychosis Studies

and Intervention Program

(PSI), The University of Hong

Kong, Hong Kong

Principal Investigator of the

State Key Laboratory of Brain

& Cognitive Sciences

Honorary Consultant

Psychiatrist, Queen Mary

Hospital



### Abstract

75% of adult mental illness has emerged by the age of 25. Mental Health in young people is an area of global concern. Few systematic studies are available for Asian populations. There has been convergent evidence that mental health challenges in young people have been increasing in the last decade. The situation has been aggravated by the COVID pandemic and between 2020 and 2023, An epidemiological study has been conducted in Hong Kong to determine the prevalence of mental disorders, and to identify risk

and protective factors.

The study also identified large help-seeking gaps. Internationally, integrated community youth mental health (ICYMH) programmes have been developed to address some of these challenges. In Hong Kong a ICYMH hub project has been set up to provide engagement, screening, and preventative intervention for young people with mental distress. The efficacy of the program is evaluated with a multi-method approach. This presentation reviews the status of youth mental health in Hong Kong and identify potential ways of addressing some of the challenges. It also reviews the data and experience gained from a comprehensive ICYMH program (the Levelmind project) in Hong Kong.

## **Biography**

Eric Chen (EC) is Chair Professor in Psychiatry and Chi-Li Pao Foundation Professor at the University of Hong Kong. He has been leading early intervention for psychosis and youth mental health developments in Hong Kong.

EC and his team have demonstrated that early intervention in first few years (the critical period) can lead to better long-term outcome in psychosis. They have also studied how an early clinical decision over anti-psychotics maintenance or discontinuation may impact long-term outcomes. EC and his team and enjoyed studying brain and cognitive mechanisms underlying psychosis. They have also investigated the role of mind-body exercise and other psychosocial interventions to improve cognitive functioning in psychosis and other mental health conditions.

The recent Hong Kong youth epidemiological study led by EC have also yielded insights into the impacts of pandemic and socio-political changes in the population. Research findings from EC's team have been reported in over 400 academic publications, book chapters, and books. EC is a recipient of the Richard Wyatt Award

from the International Association for Early Intervention in Mental Health (IEPA).

EC was elected President of the Asian College of Schizophrenia Research (2021). He is also Chair of the Communication Committee in the Schizophrenia International Research Society (SIRS). EC had served as Vice-President of the IEPA and was Founding Chairman for the Asian Network for Early Psychosis (ANEP). EC was Visiting Professor at the Harvard Medical School, and the Institute of Mental Health, Singapore.

EC had served as President of the Hong Kong College of Psychiatrists. In the Hong Kong Government, EC has been serving in the Advisory Committee on Mental Health, the Family Council and the Rehabilitation Commission. As Head of the Department of Psychiatry at the University of Hong Kong from 2013 to 2021, EC has mentored junior academics and developed the Department as a whole to enjoy a leading ranking in Asia. EC has also founded an influential non-profit body (the Early Psychosis Fund, EPISO) and co-founded MIND-HK for mental health advocacy in Hong Kong.

EC serves in two *Lancet Psychiatry* Commissions. The first is on the COVID-19 Pandemic and Mental Health and the second is on Psychosis in the Global Context. He is involved in the expert committee in the Wellcome Trust mental health funding initiative. In professional education, EC has founded a successful Master-degree program in Psychological Medicine which has been in operation since 2010. He has also published several books on psychosis. His latest book on Psychopathology (Psychopathology, an empathic representational approach, Hong Kong University Press, 2022) is an ambitious attempt to integrate cognitive science, humanistic and phenomenological aspects of psychopathology.

# Theme: Intelligent Wearable Systems

Wednesday, 10 May 2023

Time: 09:00-09:50

Venue: GH201

## Keynote Speaker

**Fast Development and  
Deployment of AI  
Techniques for Real Medical  
Applications**

**Prof. SHEN Dinggang**

Professor, Founding Dean,  
School of Biomedical  
Engineering, ShanghaiTech  
University, China

Director of IDEA Lab,  
ShanghaiTech University,  
China

IEEE Fellow, AIMBE Fellow,  
IAPR Fellow and MICCAI  
Fellow

Co-CEO of Shanghai United  
Imaging Intelligence Co., Ltd.



### Abstract

This talk will introduce our developed full-stack, full-spectrum Artificial Intelligence (AI, or deep learning) techniques for whole clinical workflow, from data acquisition to disease detection, follow-up, diagnosis, therapy, and outcome prediction (or evaluation), using multimodality data. The details of innovative technical development and implementation in both scanners and clinical pipelines (i.e., serving for fast MR, low-dose CT/PET acquisition, and clinical diagnosis/therapy) will be demonstrated, along with comparison with other state-of-the-art techniques.

## Biography

Dinggang Shen is a Professor and a Founding Dean with School of Biomedical Engineering, ShanghaiTech University, Shanghai, China, and also a Co-CEO of United Imaging Intelligence (UII), Shanghai. He is a Fellow of IEEE, The American Institute for Medical and Biological Engineering (AIMBE), The International Association for Pattern Recognition (IAPR), and The Medical Image Computing and Computer Assisted Intervention (MICCAI) Society. He was Jeffrey Houpt Distinguished Investigator and a Full Professor (Tenured) with The University of North Carolina at Chapel Hill (UNC-CH), Chapel Hill, NC, USA, directing The Center of Image Analysis and Informatics, The Image Display, Enhancement, and Analysis (IDEA) Lab, and The Medical Image Analysis Core. His research interests include medical image analysis, machine learning, deep learning, and computer vision. He has published more than 1500 peer-reviewed papers in the international journals and conference proceedings, with H-index 128 and over 70K citations. He serves as an Editor-in-Chief for Frontiers in Radiology, as well as an associate editor (or editorial board member) for eight international journals. Also, he has served in the Board of Directors, The Medical Image Computing and Computer Assisted Intervention (MICCAI) Society, in 2012-2015, and was General Chair for MICCAI 2019.

# Theme: Intelligent Wearable Systems

Wednesday, 10 May 2023

Time: 14:00-14:50

Venue: GH201

## Keynote Speaker

**Multifunctional  
Nanocomposites:  
Achievements and prospects**

### **Prof. Robert YOUNG**

Professor, Polymer Science  
and Technology, Department  
of Materials, The University of  
Manchester, United Kingdom  
National Graphene Institute,  
Henry Royce Institute, The  
University of Manchester,  
United Kingdom  
Fellow of the Royal Society  
Fellow of the Royal Academy  
of Engineering  
Member of the Academy of  
Europe



### **Abstract**

There has been growing interest over recent years in polymer-based nanocomposites because of the possibility of obtaining new materials with a range of beneficial properties, such as increased stiffness and strength, improved electrical and thermal conductivity and better barrier properties. Such materials are usually based upon polymers containing different types of nanofillers that are normally classified as being 0-dimensional (e.g. nanoparticles), 1-dimensional (e.g. nanotubes) or 2-dimensional (e.g. nanoplatelets). Nowadays, attention is becoming increasingly directed



towards preparing multifunctional nanocomposites that are both relatively easy to process and have a range of different desirable properties. Our understanding of how factors, such as a filler structure, filler size, filler geometry and distribution control the properties of polymer-based nanocomposites will be reviewed. Compromises often have to be made to obtain a nanocomposite a specific set of properties, since the same factors may affect certain properties in different ways. It will be shown how our improved understanding of how the different structural factors affect the behaviour of these nanocomposites enables us to now engineer nanocomposites with a specific set of tailored properties. Potential applications of these polymer-based multifunctional nanocomposites will be discussed.

## **Biography**

Professor Young studied Natural Sciences at the University of Cambridge, gained his PhD in 1973, became Professor of Polymer Science and Technology in Manchester in 1986 and the founding Head of the School of Materials in the newly-formed University of Manchester in 2004. This is now the largest university materials department in the UK and the focus of major UK materials research initiatives such as the Graphene and Henry Royce Institutes. He is a Fellow of Royal Society (2013), Royal Academy of Engineering (2006) and Academy of Europe (2015). His main research interest is the relationships between structure and properties in polymers and composites. He has introduced of a number of techniques that have given a completely new insight into the micromechanics of deformation in fibres and composites. In particular, he has pioneered the use of Raman spectroscopy for the analysis of deformation processes that take place in fibres at the molecular level. More recently, he has extended this approach to the mechanics of deformation of graphene and other 2D materials in nanocomposites. His research contributions have been recognised through numerous invitations to give

Plenary and Keynote lectures at International Conferences and through the awards of the Griffith Medal (2002), Leslie Holliday Prize (2011), Swinburne Medal and Prize (2012) and Platinum Medal (2019) from the UK Institute of Materials, Minerals and Mining.

# Theme: Deep Space Explorations

Wednesday, 10 May 2023

Time: 09:00-09:50

Venue: HJ304

## Keynote Speaker

**Geological diversity and strategic exploration potential of lakes and seas on Mars**

**Dr Joseph MICHALSKI**

Associate Professor,  
Department of Earth  
Sciences, The University  
of Hong Kong, Hong Kong



### Abstract

Hundreds of ancient lake basins detected on Mars via orbital remote sensing represent rare oases of hydrosphere-atmosphere-lithosphere interaction with great astrobiological potential. These paleolake basins, and associated lacustrine deposits, could preserve evidence of biogenesis on Mars, and their geology, mineralogy and geochemistry place strong constraints on past climate. Most martian paleolakes date to the Noachian (>3.7 billion years ago, b.y.a.) and likely lasted ~10<sup>2</sup>-10<sup>6</sup> years, representing only a small fraction of the ~400 million years of Noachian time. Noachian lacustrine deposits contain detrital Fe/Mg-rich clay minerals as well as authigenic Fe/Mg-carbonates, sulphates, silica, chlorides and clay minerals, which likely preserve characteristics of the ancient atmosphere and climate. While martian paleolakes are undeniably among the top targets for future surface exploration and sample return, many questions

surrounding prospects for biogenesis and biological productivity in short-lived lakes and transient warm climates on an otherwise cold planet remain: How would the faint young sun, Mars' greater distance from the sun, a dusty atmosphere or the planet's lack of a magnetic field affect possible evolution of photosynthesis and our concept of biosignatures in martian lakes? In the absence of land plants to stabilize the surface, and with slower settling of suspended sediment in lower gravity, would martian lakes have been murky with a very shallow photic zone? Top priorities for future exploration and sample return should include long lived, mineralogically complex lacustrine systems displaying an array of sedimentological and hydrothermal deep- and shallow-water deposits, which experienced wet-dry cycles relevant to the most recent ideas for life's origin on this planet.

# Theme: Smart Cities

Thursday, 11 May 2023

Time: 09:00-09:40

Venue: GH201

## Keynote Speaker (Online)

### Building Sustainable City with AI Remote Sensing

#### Prof. LI Qingquan

Party Secretary, Professor of  
School of Architecture and  
Urban Planning, Shenzhen  
University, China



#### Abstract

Rapid urbanization and its subsequent eco-environmental and climate impact underscore the need for intelligent approaches to measure and monitor these changes, which is crucial for building sustainable cities. The integration of remote sensing (RS) big data and artificial intelligence (AI) technologies has the potential to play a critical role. While the satellite and other RS technologies provide accurate spatio-temporal continuous and near real-time data about urbanization, the AI algorithms enable the identification and quantification of the subsequent eco-environment and climate changes, such as carbon emission and sequestration, with high precision and efficiency. Here, with RS+AI, we have carried out a series of studies, including the urban expansion spatiotemporal dynamic monitoring, urban eco-environment quality assessment, urban carbon emission intelligent monitoring, high-precision urban forest/mangrove carbon sequestration evaluation, and carbon credit rating framework and platform construction. These studies provide strong support for urban planning, eco-environmental protection and

sustainable development.

## **Biography**

Professor Li Qingquan is currently serving as the Party Secretary of Shenzhen University. He is an Academician of the International Eurasian Academy of Sciences, a Foreign Academician of the Russian Academy of Engineering, the Vice President of the Chinese Society for Geodesy, Photogrammetry and Cartography (CSGPC), and the Deputy Director of the Surveying and Mapping Teaching Advisory Board of the Ministry of Education and Informatization and Teaching Method Advisory Board of the Ministry of Education. He is also the Vice President and Regional Editor (Asia-Pacific) of International Society for Urban Informatics. Professor Li has been deeply involved in research on the theoretical methods and equipment of dynamic precision engineering measurement and the spatial perceptual intelligence of multidisciplinary integration. He has achieved innovation throughout the entire chain of measurement theory, sensor, measurement technology, processing methods, and high-end equipment. He has developed a research approach characterized by "theoretical innovation, equipment development, and industrial application." His research results have been applied in the construction of highways, railways, bridges, tunnels, water conservancy projects, and smart cities across 32 provinces and cities in China, generating billions of dollars in direct economic benefits and transforming China's high-end measurement equipment from import to export. Professor Li's research accomplishments include over 30 projects funded by the National Program on Key Basic Research Project (973 Program) and the National Natural Science Foundation of China (NSFC), more than 60 authorized national invention patents, 10 authorized international invention patents, a number of National Science and Technology Progress Award, and over 180 SCI academic papers (cited more than 200,000 times with an h-index of 70). Professor Li is ranked among the top 2% of scientists worldwide and is highly regarded by his students as a reputable teacher.

# Theme: Smart Energy

Thursday, 11 May 2023

Time: 09:00-09:50

Venue: HJ305

## Keynote Speaker

### Recent Research Progress of Photovoltaic Materials for Polymer Solar Cells

**Prof. LI Yongfang**

Professor

Institute of Chemistry

Chinese Academy of Sciences

Professor

College of Chemistry,

Chemical Engineering and

Materials Science of Soochow

University, China



### Abstract

Polymer solar cells (PSCs) have attracted great attention in recent years, because of their advantages of simple device structure, light weight and capability to be fabricated into flexible and semitransparent devices. The key photovoltaic materials of PSCs are conjugated polymer donors and *n*-type organic semiconductor (*n*-OS) acceptors. Recently, the low bandgap *n*-OS acceptors (such as Y6) have promoted the research progress of the PSCs significantly. Here I will report our recent research progress on the photovoltaic materials of the polymer donors, new *n*-OS acceptors, and polymer acceptors. We synthesized Y6 derivative acceptors *m*-TEH, *o*-TEH and T2EH with thiophene upper side chains, power conversion efficiency (PCE) of the PSCs based PBQ6 as donor and *m*-TEH as acceptor reached 18.51%. We developed a low cost medium bandgap D-A copolymer donor PTQ10

based on thiophene as D-unit and difluoroquinoxaline as A-unit. And the PSCs with PTQ10 as donor showed high PCEs of 18.55% for the binary device and 19.34% for the ternary device. We proposed the strategy of polymerized small molecule acceptor (PSMA) for the design and synthesis of high performance polymer acceptor, and PCE of the all polymer solar cells with new PSMA as polymer acceptor reached the level of 16~18%.

## Biography

Yongfang Li got his M.S and Ph.D. degree from East China University of Science and Technology in 1982 and from Fudan University in 1986 respectively. Then he entered Institute of Chemistry, Chinese Academy of Sciences (ICCAS) as a postdoctoral researcher in 1986 and became a staff of ICCAS in 1988 after finishing his postdoc. research. He was promoted to professor in 1993 in ICCAS. He ever did his visiting research in Institute for Molecular Sciences, Japan, from 1988.10. to 1991.4. and in University of California at Santa Barbara, USA, from 1997.6. to 1998.6. He was invited to be a professor in Soochow University in 2012 and was elected as a member of Chinese Academy of Sciences in 2013, a fellow of Royal Society of Chemistry (RSC) in 2014, and a member of the executive council of Chinese Chemical Society (CCS) for the period of 2014-2018.

Yongfang Li's main research fields are photovoltaic materials and devices for polymer solar cells, the electrochemistry of conducting polymers and semiconductor nano-materials. He has published more than 900 research papers and given more than 130 plenary and invited lectures in international and domestic academic meetings and conferences. His papers have been cited by others for more than 69000 times with a h-factor of 130. He was named as "*Young and Middle-aged Specialist with Outstanding Contributions in Natural Science*" by Chinese government in 1998, awarded the *Second-Grade National Award of China on Natural Sciences* for two



times in 1995 and 2018, and the *First-Grade and the Second-Grade Awards of Beijing City on Science and Technology* in 2005 and 2018 respectively. In 2012, he won “Macro2012 Lecture Award” from PMSE of American Chemical Society. According to the announcement of Thomson Reuters (later, Clarivate Analytics), he is one of the 21 hottest scientific researchers in 2013, and one of the highly cited researchers in the field of materials science (2014) and in the two fields of materials science and chemistry (2015~2022).

# Theme: Sports Science and Technology

Thursday, 11 May 2023

Time: 09:00-09:55

Venue: HJ302

## Keynote Speaker

**A wearable device for preventing ankle sprains in sports**

**Dr Daniel FONG**

Reader in Sports Medicine  
and Biomechanics  
School of Sport, Exercise  
and Health  
Sciences Loughborough  
University, United  
Kingdom



### Abstract

Ankle sprain is very common in sports. Repeated sprains may lead to chronic ankle instability, cartilage damage, ankle osteoarthritis, and the need for a total ankle replacement surgery. Therefore, it is important to research in its prevention. To be successful in injury prevention, we first need to understand the risk factors, the aetiology, and most importantly, the mechanism, so we can design interventions to stop the injury mechanism once it has started happening. In this talk, I will first talk about the current knowledge from some ankle sprain case reports to understand the mechanism of lateral ankle sprain injury. I will also mention a few further computational studies to understand the joint torque and ligament strains/elongation during these injuries.

I will present a patented anti-sprain system which consists of a motion sensor to monitor and detect

vigorous and hazardous ankle twisting motion, and an external electric stimulator to aid the peroneal muscle contraction to stop ankle inversion spraining motion. I will elaborate its development from the understanding of the clinical problem, the explanation of the injury mechanism from the sports biomechanics point of view, to the engineering consideration in fabrication. We have also done research and prescribed this to people with chronic ankle instability for the rehabilitation and the prevention of future re-injury, and this combination of 'prevention' and 'rehabilitation' is now called 'prehabilitation', which is one of the clinical research themes I am leading for a newly built National Rehabilitation Centre in the UK.

## **Biography**

Dr Daniel Fong gained his BSc in Physics, MSc in Exercise Science, and PhD in Orthopaedics and Traumatology from The Chinese University of Hong Kong. He has served as a Research Assistant Professor and Deputy Co-Director of the MSc Sports Medicine and Health Science programme in the Department of Orthopaedics and Traumatology in The Chinese University of Hong Kong. During May to September 2012, he was a Visiting Scholar in the Department of Orthopaedic Surgery, University of Pittsburgh. In February 2014, Daniel joined Loughborough University as a Senior Lecturer in Rehabilitation Science, and was promoted to Reader in Sports Medicine and Biomechanics in November 2021. He has been the Programme Leader of the MSc Musculoskeletal Sport Science and Health since 2015.

Dr Daniel Fong has gained £2.2M research grant since 2006. His major research is on the mechanism and prevention of ankle sprain injury in sports. He is the first and also one of the leading researchers quantifying the mechanism of ankle sprain injury with biomechanics quantities. Daniel has invented a patented method which utilises a motion sensor to detect hazardous ankle motions which may lead to an ankle sprain injury and then actuate electrical

stimulation on the lateral shank to stop the injurious motion to prevent the injury. In addition, he conducted research into knee injury, rehabilitation, slips and falls, orthopaedic devices and biomedical engineering topics. Daniel has won several research awards: Hong Kong Occupational Safety and Health Council Best Project Award 2003-2004, The Hong Kong Ergonomics Society Outstanding Project Award 2004, The Chinese University of Hong Kong Young Researcher Award 2008-2009, The Institution of Engineering and Technology Innovation Awards “Highly Commented” finalists 2012, and Hans Gros Emerging Researcher Award of The International Society of Biomechanics in Sports 2013.

# Theme: Sports Science and Technology

Thursday, 11 May 2023

Time: 11:05-12:00

Venue: HJ302

## Keynote Speaker

**Advancing  
Neuromechanical  
Research to Understand  
Ergogenic Effects of  
Neurostimulation on  
Athletic Performance**

**Prof. LIU Yu**

Professor and Dean  
Scientific Research  
Institute  
Shanghai University of  
Sport, China



### Abstract

There are two major parts in this presentation. First, on-going studies that we have been conducting over the past 4 years, by our team, will be described, which will specifically focus on how neurostimulation based techniques can be applied in the context of sports performance and enhancement. These include tDCS (Transcranial direct current stimulation), tACS (Transcranial alternating current stimulation), and the newly developed TI (Temporal Interference stimulation) methods. During the talk, the basic principles, technical progress, and application frontiers of these technologies will be introduced.

Second, some of our fieldwork involving neurostimulation applications in collaboration with the Chinese National Winter Sports Team will be presented, which provided indispensable technical

support and training improvements for the Chinese delegation at the 2022 Winter Olympics in Beijing. During the Games, our research team provided scientific support and services for the national teams, including Freestyle Skiing Aerials Team, U-track Skills Team and Ski Jumping et al. Through the use of AI algorithms, three-dimensional motion capture allowed to us track and feedback movement data to the coaching team and provided scientific support for coaches to analyze for technical training.

Neurostimulation is a promising technique that has the potential to improve athletic performance across different fields, including sports. It has been used in a variety of settings, including clinical and research contexts, and shown to be safe and effective when used appropriately. We conclude that neurostimulation has the potential to revolutionize the field of sports performance, helping athletes achieve new levels of excellence.

## **Biography**

Yu Liu is Professor of Human Movement Science at the Shanghai University of Sport (SUS), Shanghai, China. Prof. Liu was the Dean of School of Kinesiology and currently is Dean of Scientific Research Institute and Director of Key Laboratory of Exercise and Health Science of China Ministry of Education at SUS. His substantive research areas include biomechanics of neuromuscular control of human movement, sports injury, and performance enhancement. Prof. Liu teaches biomechanics of sports and exercise and provides scientific support to elite athletes in China. Prof. Liu has received Distinguished Professor of “Yangtze River Scholar” awarded by the Ministry of Education of China and became the recipient of “Outstanding Teacher in Ten Thousand Talent Program” and “First Prize of Teaching Achievement,” awarded by the Chinese Government.

Prof. Liu has been Principal Investigator on 20 research grants (for a total value of about 9.5 million US dollars)

from National Natural Science Foundation of China (NSFC), Ministry of Science and Technology of China, and Nike Global Research Partnership from the United States. He has published over 200 peer-reviewed articles (including both empirical studies and scholarly reviews) appeared in journals such as *Medicine & Science in Sports & Exercise*, *JAMA Network Open*, *Movement Disorder*, *Journal of Biomechanics* etc. He is the President of Asia Association of Coaching Science and vice president of the Chinese Society of Biomechanics in Sports and was an executive council member for the International Society of Biomechanics. In addition, he was the Deputy Director of Expert Committee of the Scientific and Technological Services for Olympics Program of General Administration of Sports of China.

# Theme: SHARP Vision

Thursday, 11 May 2023

Time: 09:00-09:50

Venue: HJ303

## Keynote Speaker

**DISC Technology: From research to commercial products**

**Mr Jackson LEUNG**

Director

Vision Science and  
Technology Co. Ltd.,  
Hong Kong



### Abstract

DISC Technology is a myopia management technology invented by Prof. To Chi Ho and his team in the early 2000s in the Hong Kong PolyU. This technology is patented in many countries and regions including China, Hong Kong, USA, Japan, Australia. This is the first myopia management technology with defocusing theory. From 2000 to 2012 in HK PolyU, DISC went through a series of studies including animal studies and contact lens clinical studies. The results of clinical study in the period showed that the myopia management efficacy was around 60%. During the 2010s, no multinational companies had interest to work with Prof. To and the Hong Kong PolyU to develop a commercial product of DISC contact lens. In early 2016, Prof. To Chi Ho and Mr. Jackson Leung set up startup company Vision Science and Technology Co Ltd (VST) to develop DISC technology contact lens for the market. In 2018, VST launched DISC-SH, a custom made 3 months replacement lens. The following year, VST launched DISC-1 Day which is a daily disposable contact lens. During 2019, VST and SKLUMT of the Hong Kong PolyU formed a new team for the development DISC



Technology spectacle lens. This new team developed a breakthrough technology for the lens manufacturing and patented this technology, named Nanostructured Technology. With this technology, this team developed DISC Spectacle lens based on contact lens design with invisible defocusing rings. This product is named MyoDISC and was started the seeding launching program in December 2022.

# Theme: Photonics

Thursday, 11 May 2023

Time: 09:00-09:50

Venue: HJ304

## Keynote Speaker

**Light amplification and sensing  
in hollow core fibres**

**Prof. Luc THÉVENAZ**

Professor, Head of the EPFL  
Group for Fibre Optics,  
Switzerland  
Member of the Swiss Academy  
of Science



### Abstract

Hollow core fibres are foreseen to be a breaking progress in the transmission of an optical signal by massively reducing the interaction between light and matter and the associated limitations, such as loss, dispersion and nonlinearities. As a direct consequence this absence of interaction also limits the possibilities to process and to impact on a light wave. A solution is to use efficient light interactions in a fluid medium like gases or liquids and this may strikingly outperform interaction strength as observed in solids. Record optical amplification is obtained, paving the way to a novel class of devices, and original sensing concepts are devised and demonstrated.

### Biography

Luc Thévenaz received the M.Sc. degree and the Ph.D. degree in physics from the University of Geneva, Switzerland. In 1988 he joined the Swiss Federal Institute of Technology of Lausanne (EPFL) where he

currently leads a research group involved in photonics, namely fibre optics and optical sensing. Research topics include fibre sensors, slow & fast light, nonlinear fibre optics and laser spectroscopy in gases. His expertise covers all applications of stimulated Brillouin scattering in optical fibres and he is known for his innovative concepts related to distributed fibre sensing pushing beyond barriers.

During his career he joined Stanford University as a postdoctoral researcher, and later stayed at the Korea Advanced Institute of Science and Technology (KAIST), at Tel Aviv University, at the University of Sydney and at the Polytechnic University of Valencia. In 2000 he co-founded the company Omnisens that is developing and commercializing advanced photonic instrumentation based on distributed fibre sensing.

He is member of the Steering Committee of the International Conference on Optical Fibre Sensors and General Chairman of this conference in 2018. He has served in the Technical Committee of several conferences, such as ECOC, CLEO-Europe, APC, etc... and has been Associate Editor of Photonics Technology Letters and the Journal of Lightwave Technology. He is now co-Executive Editor-in-Chief of the journal Nature Light: Science & Applications and is Fellow of the IEEE and OPTICA (OSA), as well as Member of the Swiss Academy of Science.

# Theme: Photonics

Thursday, 11 May 2023

Time: 10:40-11:30

Venue: HJ304

## Keynote Speaker

**Radiative properties of Black Silicon revisited in the Mid-infrared and applications**

**Prof. Tarik BOUROUINA**

Professor in Physics,  
Université Gustave Eiffel,  
France



### Abstract

Black Silicon (B-Si) is among the most popular nanostructured surfaces. Its name is due to its appearance to the bare eye, and it is known to absorb light mainly in the visible wavelength range, up to nearly  $1.1\text{ }\mu\text{m}$ , owing to band-gap absorption combined with its particular morphology.

In this presentation, we revisit Black Silicon by investigating its properties in the wavelength range extending from  $0.2\text{ }\mu\text{m}$  to  $25\text{ }\mu\text{m}$  with a focus on the Mid-Infra-Red (MIR). We elucidate the synergetic effects of morphology and volume doping; and more specifically, how the high aspect-ratio of conical nanostructures plays a crucial role in extending and tailoring the spectral range over the mid-infrared. Unprecedented light absorptance levels are obtained with up to 99.5 % in the spectral range from  $1\text{ }\mu\text{m}$  to  $8\text{ }\mu\text{m}$  and above 90% until wavelength of  $20\text{ }\mu\text{m}$ . The experimental findings are analyzed with supporting simulations.

Then, we explore applications dealing with the availability of fresh water resources taking advantage of the high absorptivity of Black Silicon, as well as its high emissivity, thanks to the Kirchhoff's law for thermal radiation. We will introduce opto-fluidic metasurfaces based on Black Silicon, specifically designed for harvesting water from air, thanks to a combination of their radiative cooling capabilities and tailored wetting properties. Another class of meta-surfaces based on Black Silicon are hierarchical 2D meta-foams, which were developed and specifically designed for optimal water desalination.

## **Biography**

Prof. Tarik Bourouina has obtained his Ph.D. in 1991 and his Habilitation (HDR) in 2000 from Université Paris-Saclay. He has been Professor of Physics at ESIEE Paris, Université Gustave Eiffel since 2002. He is also affiliated to the French National Center for Scientific Research (CNRS), within the CINTRA laboratory IRL 3288 in Singapore jointly with Nanyang Technological University (NTU) and THALES, and within the ESYCOM laboratory UMR9007 in France. Before joining back ESIEE in 2002, Prof. Bourouina took several positions in France and in Japan; at Université Paris-Saclay (1995-1998) as Associate Professor in IEF Lab (CNRS UMR 8622), at the French National Center for Scientific Research (CNRS) and at The University of Tokyo (1998-2001) as Senior Researcher in LIMMS Lab (CNRS UMI 2820). He also used to serve as the Director of the ESIEE-NTU Singapore Dual-Degree Master of Engineering (2003-2006). In 2017, he was the recipient of the Chinese Academy of Sciences President's Fellowship.

Prof. Bourouina has many contributions in the development of several companies launched by his former students and colleagues, which include Si-Ware Systems, Fluidion, Memscap, MEMS-Schlumberger and Izonics. Among his contributions to the international scientific community, Prof. Bourouina serves as an Editor in two journals of Nature Research: 'Light: Science and Applications' and 'Microsystems and

Nanoengineering'. He also serves as Associate Editor in "Advanced Devices and Instrumentation" -a Science-Partner Journal. His current interest includes micro-scale photonic and fluidic devices and the related physics as well as their applications to sustainable development.

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