Nexus

A Cell Press partner journal

Nexus Forum 2024:

Sustainable Exploration of Interdisciplinary Research and Innovation

May 9-10, 2024, Hong Kong

CellPress

The Hong Kong Polytechnic University
香港理工大學

www.nexusforum.org/nexus2024

Welcome to the Nexus Forum 2024 on Sustainable Exploration of Interdisciplinary Research and Innovation

Welcome to the Nexus Forum 2024 on Sustainable Exploration of Interdisciplinary Research and Innovation! This conference aims to bring together experts from various disciplines to explore and promote the potential of interdisciplinary collaboration in addressing complex challenges and driving sustainable development.

In today's rapidly evolving world, interdisciplinary research and innovation are crucial. By integrating knowledge, methodologies, and perspectives from different fields, researchers can generate innovative solutions to address multifaceted societal issues. The Nexus Forum provides a platform for cross-disciplinary exchange and collaboration, fostering transformative ideas and exploring the frontiers of knowledge.

Please visit https://nexusforum.org/nexus2024 or contact nexus2024@nexusforum.org for more information. If you would like to propose and organize a session, panel, workshop, or special forum, please contact us. All papers will be peer-reviewed, and accepted papers are required to be presented orally at the conference. Selected papers from Nexus Forum 2024 will be recommended for further consideration for publication in ***Nexus*** Journal. We look forward to meeting you at Nexus Forum 2024 in Hong Kong!

Committees

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Prof. Michael Obersteiner (Co-Chair)

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Miss. Hongjun Tan

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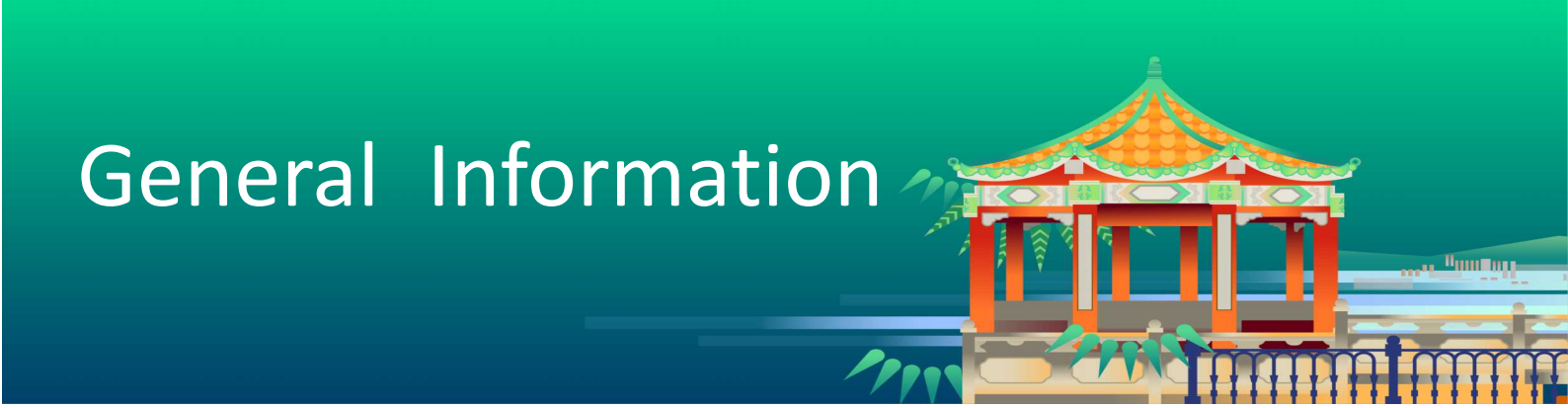
Prof. Nan Zhou, Advisory board, Nexus; Lawrence Berkeley National Laboratory, Berkeley, CA, USA

General Information



Organized by

Nexus

Supported by international journals

Applied Energy

Advances in Applied Energy

Energy 360

Energy Proceedings

Date

May 9-10, 2024

Time Difference

GMT +3 hours

Time Zone Converter

City Location & Time Zone	Time				
Doha, Conf. Time	9:00	10:00	11:00	12:00	13:00
London	6:00	7:00	8:00	9:00	10:00
Johannesburg	7:00	8:00	9:00	10:00	11:00
New Delhi	10:30	11:30	12:30	13:30	14:30
Beijing	13:00	14:00	15:00	16:00	17:00
Tokyo	14:00	15:00	16:00	17:00	18:00
San Paulo	2:00	3:00	4:00	5:00	6:00
New York, Toronto	1:00	2:00	3:00	4:00	5:00
San Francisco	22:00 (-1)	23:00 (-1)	0:00	1:00	2:00

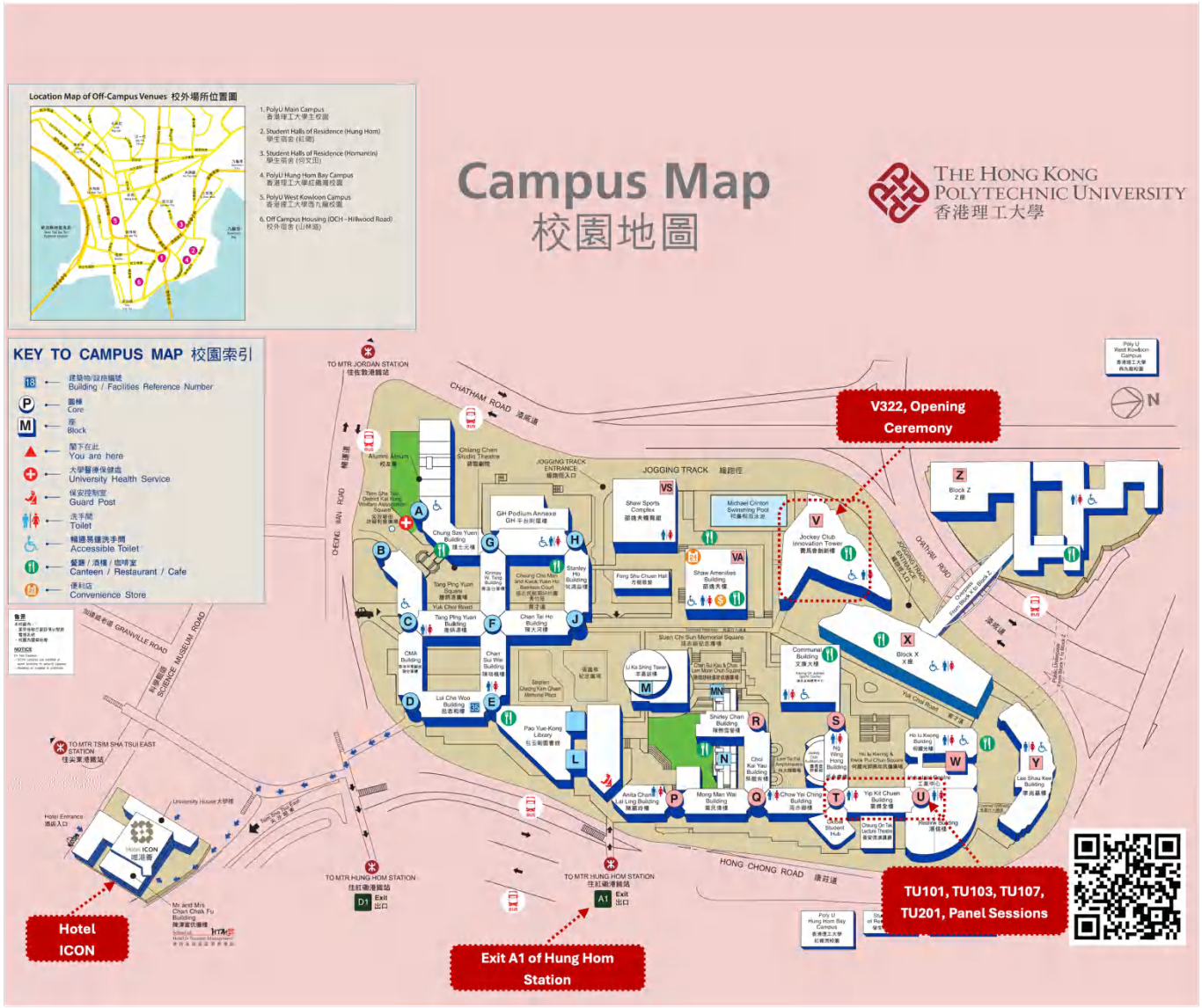
General Information

Venue

Location: The Hong Kong Polytechnic University (PolyU), 11 Yuk Choi Road, Hung Hom, Hong Kong

* The Opening Ceremony will be held in V322, Block V, PolyU Main Campus.

* The Panel Sessions will be held in TU101, TU103, TU107, TU201, Block T and Block U, PolyU Main Campus.



Editor Workshop

8th May, ROOM V322

14:00 ~ 17:00

Prof. Jerry YAN

Editor-in-Chief of ***Nexus;***

Editor-in-Chief of ***Advances in Applied Energy;***

Chair Professor of Energy and Buildings;

Director of International Centre of Urban Energy Nexus;

The Hong Kong Polytechnic University

Welcome by the Chair of Nexus Forum 2024

Bio

Prof. Yan published about 400+ papers including papers in Science, Nature Energy, Nature Climate & Nature Communications, and hold 10+ patents with over 23,500 citations, an H-index of 77 and a i10-index of 338. He has surprised nearly 200 post-docs and 50 PhDs. Prof. Yan is very active in facilitating and developing international networking and cooperation in the energy field. Under his leadership as the Editor-in-Chief of Applied Energy, the journal has improved from submissions of about 200 to more than 18,000 over the past 15 years with Impact factor of less than 1 to 11.442. Applied Energy is now listed as No. 50 of global top 100 journals by Google Scholar.

He is founding Editor-in-Chief of the journal of Advances in Applied Energy, a new journal by Elsevier established in 2020. Within only one year, the accepted papers in 2021 has received significant attention with high citations, which has been approved to be included in Scopus. The KPIs of the new journal demonstrate excellent trend, indicating the new journal will have higher impact factor than the sister journal, Applied Energy (IF 11.442). In 2023, he launched another journal, Nexus, published by Cell Proess with the partner of the HK PolyU.

Prof. Jiannong CAO

Dean of Graduate School;

Director of Research Institute for Artificial Intelligence of Things (RIAIoT) in PolyU;

Director of the Internet and Mobile Computing Lab (IMCL);

Department of Computing;

The Hong Kong Polytechnic University

Hong Kong

Welcome by the Head of the Graduate School

Bio

Prof. Cao's research interests include distributed systems and blockchain, wireless sensing and networking, big data and machine learning, and mobile cloud and edge computing. He published 5 co-authored and 9 co-edited books, and over 800 papers in major international journals and conference proceedings. He also obtained 16 patents. Prof. Cao received many awards for his outstanding research achievements, including the PolyU President Award for Excellent Performance / Achievement in Research and Scholarly Activities, Ministry of Education Higher Education Outstanding Scientific Research Output Awards – Natural Science (Second Class), China Computer Federation (CCF) Overseas Outstanding Contribution Award, IEEE TCCLD Research Innovation Award, Hong Kong ICT Awards: Best Innovation & Research - Certificate of Merit and Special Mention, Silver Medal at Geneva International Exhibition of Inventions, Bronze Medal Award of Brussels Innova, CVIC SE Software Talent Award, Ministry of Education Nominated State Science and Technology Award (First Class), National Science and Technology Progress Award (Second Class), and best paper awards from Blocksys 2021, IEEE Trans. Industrial Informatics 2018, IEEE DSAA 2017, IEEE SMARTCOMP 2016, IEEE/IFIP EUC 2016, IEEE ISPA 2013, IEEE WCNC 2011, etc. Prof. Cao has delivered over 50 keynote speeches / invited talks.

Editor Workshop

8th May, ROOM V322

Dr. Yuen YIU

Senior Scientific Editor of ***Device***

Everything you need to know before you submit

- Insights from the Senior Scientific Editor of Device on crafting compelling research narratives, structuring papers, and the peer review process.
- Tips on avoiding common mistakes and enhancing the persuasive power of manuscripts.

Bio

Yuen obtained his PhD in condensed matter physics from the University of Tennessee and did postdoctoral research at Ames Laboratory. During his research career, he primarily focused on investigating strongly correlated materials, including lithium-metal oxides and iron-based superconductors, using various neutron and x-ray scattering techniques. Before joining the editorial team at Device, he had worked as a science communicator and editor at the American Institute of Physics, and at Science, where he oversaw a wide scope of articles ranging from implantable biomedical devices to virtual reality displays. He is fluent in English, Mandarin, and Cantonese. He is currently based in Hong Kong.

Dr. Yan LI

Senior Scientific Editor of ***Matter;***

Senior Scientific Editor of ***Cell Reports Physical Science***

Everything you need to know after you submit

- Insights from the Senior Scientific Editor of Matter on the reviewing process after the paper is submitted to a journal.

Bio

Yan received his PhD from Tsinghua University. He subsequently carried out postdoctoral work at the University of Houston and then at Wageningen University, where his research focused on materials science and surface chemistry. In 2012, he joined Wiley, where he worked on a range of materials science journals including Advanced Functional Materials and Small. He joined Cell Press in 2019 and is based in the Beijing office.

Editor Workshop

8th May, ROOM V322

Dr. Peter LEE

Vice President Global Partnerships at Elsevier;

Editor-in-Chief of ***Immunity***

Everything you need to know after you publish

- Insights from the Vice President Global Partnerships at Elsevier on the reviewing process after the paper is published.
- Insights from the Editor-in-Chief of Immunity.

Bio

Dr. Peter Lee is the Editor-in-Chief of Immunity, and the Publishing Director at Cell Press. Peter started his editorial and publishing career with the Nature Publishing Group before joining Cell Press in 2005. Peter's scientific training in microbiology and immunology began in Australia at the University of Western Australia, followed by postdoctoral research at Princeton University. In addition to leading the Immunity editorial team, Peter's responsibilities include being a member of the senior management team that oversee the overall strategy and operation at Cell Press. He is also spearheading Cell Press's foray into the world of physical sciences (chemistry and energy), and leads an international program, currently focusing on China.

Dr. Xiaonan WANG

Associate professor, Department of Chemical Engineering, Tsinghua University;

Associate editor / editorial board member of 10 SCI journals e.g., ***Applied Energy***, ***Advances in Applied Energy***, ***Advanced Intelligent Systems***.

Integrating AI Tools into Scientific Writing

- Demonstration of AI applications in data analysis, hypothesis generation, and research efficiency.
- Hands-on examples and recommendations for tools that can be incorporated into graduate research.
- Ethical considerations and maintaining integrity in AI-assisted research.

Bio

Dr. Xiaonan Wang is currently an associate professor in the Department of Chemical Engineering at Tsinghua University. She is an associate editor / editorial board member of 10 SCI journals e.g., Applied Energy, Advances in Applied Energy, Advanced Intelligent Systems. She received her BEng from Tsinghua University in 2011 and PhD from University of California, Davis in 2015. After working as a postdoctoral research associate at Imperial College London, she joined the National University of Singapore (NUS) as an assistant professor since 2017 and later became an adjunct associate professor. Her research focuses on the development of intelligent computational methods including multi-scale modelling, optimization, data analytics and machine learning for applications in advanced materials, energy, environmental and manufacturing systems to support smart and sustainable development. She is leading a Smart Systems Engineering research group at NUS and Tsinghua as PI and led the Accelerated Materials Development programme in Singapore and China. She has published more than 150 peer-reviewed papers and 3 book chapters, organized and chaired several international conferences, and delivered more than 50 presentations and invited talks at conferences and universities on five continents. She was recognized as a World's Top 2% Scientists, Cell Press Women Scientist, 50 Women in Tech by Forbes China, AIChE-SLS Outstanding Young Principal Investigator, Young Researcher Award for Engineering Sustainable Development, IChemE Global Awards Young Researcher finalist and selected for Royal Society International Exchanges Award, as well several best paper and emerging investigator awards.

Keynote Speakers

9th May, ROOM V322

Interdisciplinary Solutions for Sustainable Futures

9:00 ~ 9:40
Opening Ceremony

Chair: Prof. Jerry YAN

Dr. Miranda LOU

Executive Vice President
The Hong Kong Polytechnic University, Hong Kong

Welcome from the Executive Vice President of PolyU (5min)

Bio

Dr Miranda Lou is the Executive Vice President of The Hong Kong Polytechnic University, overseeing institutional advancement, mainland development, alumni engagement, finance, human resources, communications and public affairs, campus development and facilities management. Dr Lou has worked for Wharf (Holdings) Limited, Independent Commission Against Corruption (ICAC) and OOCL Group. Her last position prior to joining the University was Chief Operating Officer of OOCL Logistics, leading the strategic planning and global business development of the company. Previously, she had served in different global and regional leadership roles within the OOCL Group, including Director of Asia-Europe Trade, Managing Director of Hong Kong and South China, and General Manager of Corporate Administration.

Prof. Qingyan CHEN

Director of PolyU Academy for Interdisciplinary Research (PAIR)
Chair Professor of Building Thermal Science

Interdisciplinary Research Initiatives in PolyU (15min)

Bio

Prof. Qingyan “Yan” Chen's current research topics include indoor environment, aircraft cabin environment, and energy-efficient, healthy, and sustainable building design and analysis. He has published three books, six papers in book chapters, and over 470 journal and conference papers, and has been invited to deliver more than 180 lectures internationally. Prof. Chen received several technical paper and poster awards and Distinguished and Exceptional Service Awards from the American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE) and CAREER award from the National Science Foundation in the United States. He has also received the Willis J. Whitfield Award from the Institute of Environmental Sciences and Technology, John Rydberg Gold Medal from the Scandinavian Federation of Heating, Ventilating and Sanitary Engineering Associations (SCANVAC), and Distinguished Achievement Award from the International Building Performance Simulation Association (IBPSA). He was awarded as an honorable member of the Society of Heating, Air-conditioning and Sanitary Engineers of Japan (SHASE). Prof. Chen is a fellow of the ASHRAE, the International Society of Indoor Air Quality (ISIAQ), and the International Association of Advanced Materials (IAAM).

Keynote Speakers

9th May, ROOM V322

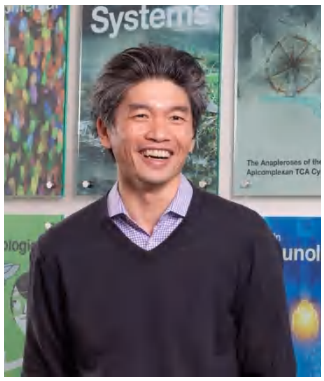
Prof. Jerry YAN

Editor-in-Chief of Nexus;
Editor-in-Chief of Advances in Applied Energy;
Chair Professor of Energy and Buildings;
Director of International Centre of Urban Energy Nexus;
The Hong Kong Polytechnic University

Welcome from the Editor-in-Chief of Nexus and Chairman of Nexus Forum 2024 (5min)

Bio

Prof. Yan's research interests include advanced energy systems; renewable energy; climate change mitigation technologies and related environment and policy etc. He is one of the first scientists who introduced BECCS (bioenergy with CO2 capture and storage) in 2000s which becomes the most important carbon NETs (negative emission technologies) for global 1.5C target recommended by IPCC. Prof. Yan also contributed significantly for the development of world's first pilot EvGT (Evaporative gas turbine) on the most accurate thermophysical models of the properties and systems with wide application range. His R&D on integrating distributed energy systems with grids and consumers, for example, M-TES (mobilized thermal energy storage) with integration of district heating network and buildings, contribute significantly to the technology innovations and breakthroughs to the future energy system with high renewable energy penetration. Prof. Yan published about 400+ papers including papers in Science, Nature Energy, Nature Climate & Nature Communications, and hold 10+ patents with over 23,500 citations, an H-index of 77 and a i10-index of 338. He has surprised nearly 200 post-docs and 50 PhDs. As PI, Prof. Yan received external grants from research foundations and industry in several EU Projects (FP5, FP6, FP7, and Horizon) and other international and national projects with more than 200 MSEK (20+ MEuro) during the post 10 years. He has led research platform (Future Energy Profile) with funding of Ca 10 MEuro from the Swedish Knowledge Foundation and industrial partners.



Dr. Peter LEE

Vice President Global Partnerships at Elsevier
Editor-in-Chief, Immunity

Welcome from the Vice President Global Partnerships at Elsevier (15min)

Bio

Dr. Peter Lee is the Editor-in-Chief of Immunity, and the Publishing Director at Cell Press. Peter started his editorial and publishing career with the Nature Publishing Group before joining Cell Press in 2005. Peter's scientific training in microbiology and immunology began in Australia at the University of Western Australia, followed by postdoctoral research at Princeton University. In addition to leading the Immunity editorial team, Peter's responsibilities include being a member of the senior management team that oversee the overall strategy and operation at Cell Press. He is also spearheading Cell Press's foray into the world of physical sciences (chemistry and energy), and leads an international program, currently focusing on China.

Keynote Speakers

9th May, ROOM V322

9:40 ~ 10:20

Chair: Prof. Jerry YAN

Prof. Peng GONG

Vice-President and Pro-Vice-Chancellor (Academic Development);
Chair Professor of Global Sustainability;
The University of Hong Kong
Hong Kong

Planetary health for global sustainability

Bio

Prof. Peng Gong also serves concurrently as Chair Professor in the Faculty of Social Sciences (Geography) and the Faculty of Science (Earth Sciences) at HKU. He was professor and Chair of the Department of Earth System Science, Dean of School of Sciences, at Tsinghua University in China. He had taught in the Department of Geomatics Engineering at the University of Calgary (Canada) between 1991 and 1994, and had been on faculty in the Department of Environmental Science, Policy and Management at the University of California, Berkeley (CA, USA) between 1994 and 2015. In 2004, he served as the founding director of the State Key Laboratory of Remote Sensing Science in the Chinese Academy of Sciences and Beijing Normal University.

His major research interests include mapping and monitoring of global land cover and land use changes, climate change modeling, and modelling of environmentally related infectious diseases. He is the author / co-author of over 600 articles and 8 books. He co-chaired 8 Lancet Commission reports on climate change and health and healthy cities in China. He served as one of the nine members on the Board of Overseas Advisors to the Ministry of Science and Technology of China, and as vice Chair of the Committee for Urban Assessment of the Ministry of Housing and Urban-Rural Development of China.

10:50 ~ 11:30

Chair: Prof. Fu XIAO

Prof. Shandong TU

Member of Chinese Academy of Engineering;
Mechanical and Chemical Engineering, East China University

Knowledge production paradigm in the context of carbon neutrality

Bio

Prof. Tu has devoted his research to the area of high temperature engineering, including thermal effect on materials, structural integrity assessment and design of high temperature equipment against failures. He has authored over 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, among others. 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 editorial board member for a number of journals, including Adv. Applied Energy, Frontiers of Chemical Sciences and Engineering, Int J Pres Ves and Piping, J of Materials Science and Technology, Fatigue and Fracture of Engineering Materials and

Keynote Speakers

9th May, ROOM V322

of Science and Technology,
Shanghai, China

Structures and so on.

Abstract

The lecture discusses the knowledge production paradigms in the context of carbon neutrality. The collaboration models of different disciplines and cross disciplines are analysed based on the scientometric approach. An index to reflect the degree of collaboration is defined in order to score various research disciplines and organizations. It is obvious the collaborative culture is different across different disciplines and organizations.

11:30 ~ 12:10

Chair: Prof. Fu XIAO

AIoT for Ubiquitous Intelligence: An Interdisciplinary Research Perspective

Prof. Jiannong CAO

Dean of Graduate School;
Director of Research Institute for Artificial Intelligence of Things (RIAIoT) in PolyU;
Director of the Internet and Mobile Computing Lab (IMCL);
Department of Computing;
The Hong Kong Polytechnic University
Hong Kong

Bio

Prof. Cao is currently the Otto Poon Charitable Foundation Professor in Data Science and the Chair Professor of Distributed and Mobile Computing in the Department of Computing at The Hong Kong Polytechnic University (PolyU), Hong Kong. He is also the Dean of Graduate School, the director of Research Institute for Artificial Intelligence of Things (RIAIoT) in PolyU, the director of the Internet and Mobile Computing Lab (IMCL) . He was the founding director and now the director of PolyU's University's Research Facility in Big Data Analytics (UBDA). He served the department head from 2011 to 2017. Prof. Cao is a member of Academia Europaea, a fellow of the Hong Kong Academy of Engineering Science, a fellow of IEEE, a fellow of China Computer Federation (CCF) and an ACM distinguished member.

Prof. Cao's research interests include distributed systems and blockchain, wireless sensing and networking, big data and machine learning, and mobile cloud and edge computing. He published 5 co-authored and 9 co-edited books, and over 800 papers in major international journals and conference proceedings. He also obtained 16 patents. Prof. Cao received many awards for his outstanding research achievements, including the PolyU President Award for Excellent Performance / Achievement in Research and Scholarly Activities, Ministry of Education Higher Education Outstanding Scientific Research Output Awards – Natural Science (Second Class), China Computer Federation (CCF) Overseas Outstanding Contribution Award, IEEE TCCLD Research Innovation Award, Hong Kong ICT Awards: Best Innovation & Research - Certificate of Merit and Special Mention, Silver Medal at Geneva International Exhibition of Inventions, Bronze Medal Award of Brussels Innova, CVIC SE Software Talent Award, Ministry of Education Nominated State Science and Technology Award (First Class), National Science and Technology Progress Award (Second Class), and best paper awards from Blocksys 2021, IEEE Trans. Industrial Informatics 2018, IEEE DSAA 2017, IEEE SMARTCOMP 2016, IEEE/IFIP EUC 2016, IEEE ISPA 2013, IEEE WCNC 2011, etc. Prof. Cao has delivered over 50 keynote speeches / invited talks.

Keynote Speakers

9th May, ROOM TU201

Innovative Materials-based Solutions for Sustainability

13:30 ~ 14:10

Chair: Prof. Shandong TU, Dr. Xiaonan WANG

Prof. Chunshan SONG

Dean of Science and Wei Lun Professor of Chemistry;
The Chinese University of Hong Kong
Shatin, Hong Kong

Creating a Sustainable Supply Chain Using Carbon Dioxide and Water

Bio

Prof. Chunshan Song is the Dean of Science and Wei Lun Professor of Chemistry at the Chinese University of Hong Kong. He is a Distinguished Professor Emeritus in Fuel Science and Chemical Engineering and the former Director of EMS Energy Institute at the Pennsylvania State University. With BSc in Chemical Engineering from Dalian University of Technology and Ph.D. in Applied Chemistry from Osaka University, his research focuses on catalysis, plasma catalysis and chemistry of energy and fuels including CO2 capture and utilization. He has received George A. Olah Award, Henry H. Storch Award, ACS Fellow, and Distinguished Fulbright Scholar Award (US-UK).

14:10~ 14:50

Chair: Prof. Shandong TU, Dr. Xiaonan WANG

Prof. Xiaobo YIN

Associate Vice-President;
Department of Mechanical Engineering;
The University of Hong Kong
Hong Kong

Materials-based Solutions for Sustainability

Bio

Dr. Xiaobo Yin received his PhD from Stanford University in 2008 and is currently a Professor of Mechanical Engineering at the University of Hong Kong. He is a fellow of OSA and SPIE. Prior to joining the University of Hong Kong, he was the Bruce S. Anderson Faculty Fellow of the College of Engineering and Applied Sciences at the University of Colorado Boulder. His research focuses on nanostructured optical materials, radiative heat transfer, high-temperature materials, and scalable manufacturing. He authored and co-authored more than 100 journal publications and is one of the most highly cited researchers by Clarivate Analytics. His works have been featured in numerous media outlets including Nature, Science, Physics Today, Scientific American, the Economists, and Forbes. He was a recipient of the 2015 DARPA Young Faculty Award, the 2017 Moore Inventor Fellowships, the 2017 Kavli Foundation Early Career Lectureship of Materials Science, and the 2022 Xplorer Prize. His recent work on passive radiative cooling was named one of the top 10 breakthroughs of the year 2017 by the Institute of Physics (IOP) Physics World and the top 10 most reviewed news by The Economists.

Abstract

Micro/nanostructured materials offer significantly new opportunities for high-efficiency devices and

Keynote Speakers

9th May, ROOM TU201

systems for energy harvesting, conversion and storage. There is, however, a tremendous gap between the proof-of-principle demonstrations at the small scale and the intrinsically large-scale real-world energy systems and sustainable applications. In this talk, I will give an overview of our research and, more specifically, present our recent development on how structured photonic materials address the challenge of the tremendous power hungry for space cooling and promote photosynthesis and crop yield in greenhouses.

14:50~ 15:30

Chair: Prof. Shandong TU, Dr. Xiaonan WANG

Prof. Jian LU

Chair Professor of Mechanical Engineering;
President of HK-MRS;
Dean of College of Engineering;
City University of Hong Kong
Hong Kong

Advanced material and additive manufacturing: nexus for the future

Bio

Prof. Jian LU is Chair Professor of Mechanical Engineering; President of HK-MRS, Dean of College of Engineering at the City University of Hong Kong. He started his university study at Peking University and obtained the Dip. Ing., Master (DEA) degree and Doctoral degree from University of Technology of Compiegne in 1984 and 1986 respectively. His research focus are: advanced nanomaterials and its integration in energy and biomedical systems. He published more than 480 SCI journal papers including papers in Nature (cover story), Science, Nature Materials, Nature Chemistry, Nature Water, Nature Communications, Science Advances, Materials Today, Advanced Materials and his research works are cited more than 43000 times. He was elected as an academician by the National Academy of Technologies of France in 2011 and received the Guanghua Engineering Science and Technology Award from the Chinese Academy of Engineering in 2018.

Abstract

To develop highly efficient and advanced mobility, energy and information systems, the creation of new materials and associated manufacturing technology is one of the key directions. This presentation will feature recent development of structural nanomaterials and high-performance functional nanomaterials for the potential applications in mechanical and energy systems. The mechanisms of nanomaterials processing with different nano-structures by highly efficient physical methods will firstly be reported. The feasibility of applying different nanomaterials on various catalysis for splitting water (HER), light-weight vehicle and energy systems such as robotics in challenging environment (nuclear plant), ocean exploration and thermal energy conversion will be discussed. The development and research direction of the biomimetic morphing and 3D printed nanostructured materials on advanced water treatment and the passive interfacial cooling-induced sustainable electricity–water cogeneration will be presented.

Keynote Speakers

10th May, ROOM TU201

Tsinghua University Institute for Carbon Neutrality (ICON) and international Centre of Urban Energy Nexus (UEX) Joint Session: Carbon Neutrality and Energy System Transformation (CNEST)

8:30 ~ 9:00

Chair: Prof. Yongdan LI

Prof. Kebin HE

Member of the Chinese Academy of Engineering,
Dean of the Institute for Carbon Neutrality
Tsinghua University
Beijing, China

Carbon Neutrality and Energy System Transformation (CNEST): a new international research collaboration

Bio

Prof. Kebin He is Dean of the Institute for Carbon Neutrality at Tsinghua University. He is a Member of the Chinese Academy of Engineering, and Vice Chairman of the National Expert Committee for Ecology and Environmental Protection in China. He is co-Editor-in-Chief of Technology Review for Carbon Neutrality. His research interests include complex air pollution, coordinated control of air pollution and greenhouse gas emissions, and carbon neutrality system. He was listed as Highly Cited Chinese Researcher by Elsevier (2014-2023) and Highly Cited Researcher by Clarivate Analytics (2018-2023).

9:00 ~ 9:30

Chair: Prof. Yongdan LI

Prof. Michael OBERSTEINER

Director, Environmental Change Institute
University of Oxford, UK

Negotiating at the Nexus: Insight from serious sustainability games

Bio

Professor 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. He advises numerous national and international organizations with science-based policy research. He is author of over 250 scientific papers and is a highly-cited researcher.

Abstract

Sustainable development entails implementing and adapting policy portfolios aimed at achieving numerous objectives. Nexus issues that emerge among negotiating parties may involve synergies or trade-offs. In this presentation, I will share insights gained from participating in scenathons within the

Keynote Speakers

10th May, ROOM TU201

global FABLE consortium. A primary objective of the FABLE Consortium is to ensure alignment between the ambitions of national pathways and global targets, as well as coherence across trade projections among national pathways. To accomplish this, FABLE has developed a modeling infrastructure centered around the Scenathon. The Scenathon, short for "Scenario-Marathon," is a collaborative decision-making exercise that integrates models, stakeholders, and technology to collectively address complex, large-scale multi-objective challenges. The concept of Scenathon enables us to pinpoint and explore potential agreements or stumbling blocks in negotiating joint sustainability outcomes. We conclude that employing digital twinning in negotiations can help surmount apparent political deadlocks.

9:30 ~ 10:00

Chair: Prof. Yongdan LI

Prof. Nan ZHOU

Energy / Environmental Policy Senior Scientist / Engineer
Lawrence Berkeley National Laboratory, Berkeley, CA, USA

The Net Zero World Initiative: Accelerating Global Building Decarbonization

Bio

Dr. Zhou is a Senior Scientist and former Department Head of the International Energy Analysis Department (2018-2022) at Lawrence Berkeley National Laboratory. Her work focuses on international energy and climate change-related topics. Dr. Zhou currently serves as the Technical Program Manager for the Net Zero World Action Center, an initiative launched by the U.S. government to work with countries to implement their climate ambition pledges and accelerate transitions to net zero, resilient, and inclusive energy systems. She is an Advisory Board Member of the Asia Pacific Energy Research Centre under APEC. She also served as a Lead Author for the chapter on Mitigation and Development Pathways in the Near- to Mid-Term of the Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report. She received the 2017 R&D100 Award for the BEST City tool, 2020 R&D100 Award for the BETTER tool, and is the finalist for the 2016 C3E Awards for mid-career women's leadership and achievement.

Keynote Speakers

10th May, ROOM TU201

10:00 ~ 10:30

Chair: Prof. Yongdan LI

Prof. Weiqiang CHEN

Professor of Urban and Industrial Sustainability;
The Institute of Urban Environment;
Chinese Academy of Sciences, China

Metal-Energy Nexus and Sustainability

Bio

Prof. Weiqiang CHEN is professor of Urban and Industrial Sustainability at the Institute of Urban Environment, Chinese Academy of Sciences (CAS). He graduated from the School of Environment at Tsinghua University, and worked at the Yale Center for Industrial Ecology during 2010-2015. His research focuses on (1) industrial ecology, (2) urban metabolism and sustainability, (3) energy-material-environment nexus, and (4) anthropogenic cycles and sustainable management of materials, especially metals, plastics, and chemicals. His studies have been published in PNAS, Nature Climate Change, Nature Geoscience, Nature Communications, Environmental science and Technology, and other first-level journals. He is now associate editor for two journals Resources, Conservation, and Recycling and Journal of Industrial Ecology.

11:00 ~ 11:30

Chair: Prof. Xi LU, Prof. Wei FENG

Mr. Paul TOMLINSON

Chief Operating Officer of CLP Power Hong Kong Ltd

Leveraging innovation to Drive Sustainability with Hong Kong's Largest internet-of-Things Network :CLP's Advanced Metering Infrastructure

Bio

Paul Tomlinson, based in Hong Kong, is currently a Chief Operating Officer at CLP, bringing experience from previous roles at CLP, Sembcorp Utilities UK, Groundwork and Eggborough Power Ltd. Paul Tomlinson holds a 2002 - 2004 MBA in Master of Business Administration @ University of Leeds. With a robust skill set that includes Power Generation, Energy, Renewable Energy, Power Plants, Change Management and more, Paul Tomlinson contributes valuable insights to the industry.

Keynote Speakers

10th May, ROOM TU201

11:30 ~ 12:00

Chair: Prof. Xi LU, Prof. Wei FENG

Prof. Xianguo LI

Fellow of Canadian Academy of Engineering
Fellow of the Engineering Institute of Canada
Mechanical and Mechatronics Engineering, University of Waterloo

Energy and Water Sustainability: Viability with Electrolysis?

Bio

Professor Li's main research interests and activities are in the area of thermal fluid / science, including energy systems and energy storage, various energy conversion devices, propulsion and power generation systems, aerosol generation and applications, and transportation fuel cell and battery systems. These research projects involve thermodynamics, fluid dynamics, hydrodynamic stability, multiphase flow, heat and mass transfer, liquid atomization and sprays, combustion, power generation and propulsion systems. Professor Li is the Founding Editor-in-Chief of the International Journal of Green Energy, which established the International Green Energy Conference series and launched the annual review series Progress in Green Energy. He is also the Field Chief Editor, Frontiers in Thermal Engineering. He is currently serving on the editorial board of dozens of international scientific / technical journals, book series on fuel cells and energy systems, as well as an encyclopaedia on Energy Engineering and Technology. Professor Li is a fellow of Canadian Academy of Engineering (FCAE), a fellow of the Engineering Institute of Canada (FEIC) and a fellow of the Canadian Society for Mechanical Engineering (CSME), and serves as VP Technical Program for CSME. Previously he served as the CSME Division Chair for the Advanced Energy Systems technical division. He also currently serves as the President of the International Association for Green Energy and President of the Fuel Cell Division, International Association for Hydrogen Energy and established the World Fuel Cell Conference series.

Keynote Speakers

10th May, ROOM TU201

12:00 ~ 12:30

Chair: Prof. Xi LU, Prof. Wei FENG

Dr. Han SHI

Nonresident Senior Fellow,
Centre on Contemporary China and the World,
The University of Hong Kong

Business Model Innovation for Sustainability

Bio

Dr. Shi is a Nonresident Senior Fellow at the University of Hong Kong (HKU)'s Centre on Contemporary China and the World and a Visiting Scholar of the Business School of the Hong Kong University of Science and Technology. He was also the founding Head of the ESG Centre at the HKU's Institute for China Business. He holds an M. Phil. and a Ph.D. in Industrial Ecology from Yale University.

Dr. Shi is a veteran in sustainable development in China, with over 30 years of experience since the Earth Summit in 1992. He has advised more than 1,000 companies on various aspects of sustainability, such as cleaner production, environmental management, circular economy, green supply chain management, ESG integration and information disclosure, and net-zero road mapping.

Since 2017, he has served as the Chief Science Advisor for the Green Development Alliance of the National Economic & Technological Development Zones, an initiative supported by the Ministry of Commerce of China. Dr. Shi has also served as a consultant for many international organizations, including the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO), the United Nations Environment Programme (UNEP), the United Nations Habitat Centre (HABITAT), the Asian Development Bank, the World Bank, the European Commission, the Global Environment Facility (GEF), the Australian Agency for International Development, and the German Ministry of the Environment.

Keynote Speakers

10th May, ROOM V322

Smart Data-based Science and Technology

15:30 ~ 16:10

Chair: Prof. Michael OBERSTEINER, Prof. Nan ZHOU

Prof. Dongxiao ZHANG

Executive Vice President and Provost,
Eastern Institute of Technology,
Ningbo (EIT);
Member of the U.S. National
Academy of Engineering

Scientific Machine Learning: Knowledge Embedding and Knowledge Discovery

Bio

Prof. Dongxiao Zhang is a Member of the U.S. National Academy of Engineering, the winner of "The National Science Fund for Distinguished Young Scholars", a Fellow of Geological Society of America, an Honorary Member of Society of Petroleum Engineers, and once served as a distinguished professor of the Ministry of Education. He had served as Provost and Vice President (Academic Affairs) at Southern University of Science and Technology (SUSTech). He had held positions as Senior Scientist at Los Alamos National Laboratory, Miller Chair Professor at the Department of Petroleum and Geological Engineering at the University of Oklahoma, Gordon S. Marshall Professor at the University of Southern California, Executive Dean of Graduate School, Dean of College of Engineering and Founding Chair of Department of Energy and Resources Engineering at Peking University. Prof. Zhang is an internationally well known expert in unconventional oil and gas production, groundwater hydrology, and geological carbon sequestration, whose research achievements in stochastic modeling, numerical simulation, inverse modeling and machine learning are widely adopted by his peers.

16:10 ~ 16:50

Chair: Prof. Michael OBERSTEINER, Prof. Nan ZHOU

Prof. Zhaoyang DONG

Head (EE), Department of Electrical
Engineering;
Chair Professor, Department of
Electrical Engineering;
City University of Hong Kong
(CityU), Hong Kong

Real-Time Carbon Emission Measurement Based on Non-Intrusive Load Monitoring

Bio

Prof Z.Y. Dong was a Professor in School of Electrical & Electronics Engineering at the Nanyang Technological University. His previous roles include Director of UNSW Digital Grid Futures Institute, Ausgrid Chair Professor and Director of Ausgrid Centre for Intelligent Electricity Networks led R&D support for the Smart Grid, Smart City national demonstration project in Australia. His research expertise includes power system planning and stability, smart grid/micro-grid, load modeling, renewable energy grid connection, electricity market, smart city planning, and computational methods for energy systems. He has been editor/associate editor for several IEEE transactions and IET journals. He has won many research and industry grants nationally and internationally. Prof Dong is a Fellow of IEEE for his contributions in computational methods in power system planning and stability.

Abstract

Accurate carbon emission measurement is essential in the fight against climate change. This seminar

Keynote Speakers

10th May, ROOM V322

presents an innovative real-time estimation framework specifically designed for industrial parks, overcoming the limitations of existing methods. Our approach integrates Scope 1 and Scope 2 emissions by leveraging non-intrusive load monitoring (NILM) algorithms with real-time meter data. Scope 1 emissions are calculated using an advanced NILM algorithm, achieving a remarkable accuracy rate of 93.4%. Scope 2 emissions are determined through precise factors and locational data integration. Validation conducted within a four-factory industrial park demonstrates an estimation error of only 0.44% over the course of one year, surpassing the accuracy of the IPCC method by 2.32%. The real-time nature of our estimation methodology facilitates proactive emissions tracking, enabling informed decision-making for the implementation of sustainable practices.

16:50 ~ 17:30

Chair: Prof. Michael OBERSTEINER, Prof. Nan ZHOU

Prof. Dominik LENGYEL

Full University professor, Chair of Architecture and Visualisation, BTU University, Cottbus, Germany
Member of European Academy of Sciences and Arts, Salzburg, Austria

Designing of and for urban spaces: Experiences from co-operative projects in the fields of archaeology and energy technology

Bio

Dominik Lengyel is full University professor, Chair of Architecture and Visualisation, BTU University, Cottbus, Germany, and member of European Academy of Sciences and Arts, Salzburg, Austria. Worked as architect at O. M. Ungers and founded an office for architectural visualisation with Catherine Toulouse. Research focus is the visualisation of abstract spaces, in particular archaeological hypotheses. Exclusively collaborative projects funded by the German Research Foundation DFG, the German Archaeological Institute DAI, the Gerda Henkel Foundation and the German Federal Ministries of Education and Research (BMBF), of Economic Affairs and Energy (BMWi) and of the Interior, for Construction and Home Affairs (BMI).

Keynote Speakers

10th May, ROOM V322

17:30 ~ 18:10

Prof. John Wenzhong SHI

Otto Poon Charitable Foundation Professor in Urban Informatics;
Chair Professor of Geographical Information Science and Remote Sensing;
Director of PolyU-Shenzhen Technology and Innovation Research Institute (Futian);
Director of Smart Cities Research Institute

Chair: Prof. Michael OBERSTEINER, Prof. Nan ZHOU

Urban informatics: a transdisciplinary foundation for smart cities

Bio

Prof. Wenzhong Shi is the Director of Otto Poon Charitable Foundation Smart Cities Research Institute of The Hong Kong Polytechnic University (PolyU), Director of PolyU-Shenzhen Technology and Innovation Research Institute (Futian), and Chair Professor in Geographic Science and Remote Sensing. He is the Academician of the International Eurasian Academy of Sciences and a Fellow of the Academy of Social Sciences (UK). He serves as President of the International Society for Urban Informatics and Editor-in-Chief of the International Journal of Urban Informatics. His research covers urban informatics for smart cities, geographic information science, AI-based remote sensing, spatial big data analytics and quality control, and mobile mapping and 3-D modelling. Prof Shi is among the worldly top 2% cited researchers and owns over 40 patents. He has won the Natural Science Award, China's highest award for fundamental research; Wang Zhizhuo Award by ISPRS; Distinguished Scholar Prize by CPGIS; and Gold Medals in 2021&2023 Geneva International Exhibition of Inventions.

Abstract

Urban informatics is an emerging transdiscipline that integrates urban science, computer science, and geo-information science. It uses theories and methods based on new information technology to understand, manage, and design cities, providing an essential scientific and technological foundation for smart cities. The speech will first introduce the theoretical framework of urban informatics, illustrate its transdisciplinary nature, and review the theoretical bases of various disciplines involved in this transdiscipline. The speech will then introduce the key enabling technologies of urban informatics and its development prospects in the near future. The speech will conclude with the latest situation and events of the international urban informatics research community.

Joint Session

Tsinghua University Institute for Carbon Neutrality (ICON) and international Centre of Urban Energy Nexus (UEX) Joint Session: Carbon Neutrality and Energy System Transformation (CNEST)

Date: May 10th, 2024, HK Time: 8:30am - 12:30pm

Location: Room TU201

Description: Energy system transformation forms the backbone of the world's reshaping toward net zero by the mid-21st century. It entails delivery of "secure, economic, and green" energy all at once, enabled by advanced sciences and technologies that are partly underway today. This special session aims to present cutting-edge multidisciplinary research on carbon neutrality and energy system transformation and share the latest global research collaboration endeavor thereof. The session will bring together different disciplines, such as carbon and geosciences, environmental sciences, energy and power engineering, and data sciences and smart technologies. Topics may include but not limited to system theory and transformation pathways, global carbon flow network, low-, zero-, and negative carbon technologies, and smart energy and grid technologies.

Room: TU201 **Session Chair: Prof. Yongdan LI, Aalto University**		
Time	Keynote Speaker	Title
8:30 ~ 9:00	Prof. Kebin HE	Carbon Neutrality and Energy System Transformation (CNEST): a new international research collaboration
9:00 ~ 9:30	Prof. Michael OBERSTEINER	Negotiating at the Nexus: Insight from serious sustainability games
9:30 ~ 10:00	Prof. Nan ZHOU	The Net Zero World Initiative:Accelerating Global Building Decarbonization
10:00 ~ 10:30	Prof. Weiqiang CHEN	Metal-Energy Nexus and Sustainability
Coffee Break (TU201)		
Room: TU201 **Session Chair: Prof. Xi LU, Tsinghua University; Prof. Wei FENG, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences**		
Time	Keynote Speaker	Title
11:00 ~ 11:30	Mr. Paul TOMLINSON	Leveraging Innovation to Drive Sustainability with Hong Kong's Largest Internet-of-Things Network : CLP's Advanced Metering Infrastructure
11:30 ~ 12:00	Prof. Xianguo LI	Energy and Water Sustainability: Viability with Electrolysis?
12:00 ~ 12:30	Dr. Han SHI	Business Model Innovation for Sustainability
Lunch: Communal Building, 4th floor of Block S（聚賢樓）		

Day 1: May. 9
Oral Presentation

Room: TU201 Session 1: Renewable Energy and Sustainability Session Chair: Dr. Sunliang CAO, The Hong Kong Polytechnic University; Dr. Ruoyu YOU, The Hong Kong Polytechnic University;			
Time	Paper ID	Author	Paper Title
16:00 ~ 16:15	3	Wenwen Du, Zhanping You, Xuemin Zhao, Camila Barreneche, Yulong Ding Ding and Xiaohui She	Liquid air storage tank with cold recovery and storage from boil-off gas with phase change materials for long-term energy storage
16:15 ~ 16:30	4	Mai Shi, Xi Lu and Michael Craig	Climate change impacts on the evolving value and adoption of residential rooftop solar PV
16:30 ~ 16:45	7	Tao Tao, Xiaokun Yao, Yuyin Wang, Wei Li and Renaud de Richter	Negative emission technologies enabled by solar driven large-scale airflows
16:45 ~ 17:00	11	Zhenxi Ma, Ruoshi Tang, Yanyu Gao and Liang Cai	Life Cycle Assessment and Optimization of the High-temperature Fuel cell Based Integrated Energy System Considering the Hydrogen Source
17:00 ~ 17:15	19	Huaiyu Wang, Jinxin Yang, Shuofeng Wang, Changwei Ji, Yunshan Ge and Xin Wang	Optimization of ignition strategy for hydrogen Wankel rotary engines based on data-driven approach
17:15 ~ 17:30	48	Jielin Luo, Kaiyin Yang, Yongting Shen and Hongxing Yang	Conceptualization on the utilization and optimization of a cooling-heating co-generation heat pump using new-generation CO2/HFO blends for indoor CO2 control in a typical office
17:30 ~ 17:45	50	Yinan Wang, Yuqing Wang and Yixiang Shi	Classification of Hydrogen Oxidation Mechanisms of Solid Oxide Fuel Cells Based on Machine Learning
17:45 ~ 18:00	74	Juan Wu and Hongsheng Wang	Solar hydrogen production by seawater electrolysis: recent advance, challenges, and future perspectives
18:30 ~ 21:30	Banquet (All participants): Hotel ICON B1 Floor, Chinese Dinner		
Room: TU101 Session 2: Urban Environment and Planning Session Chair: Dr. You DONG, The Hong Kong Polytechnic University; Dr. Chengxiang ZHUGE, The Hong Kong Polytechnic University;			
Time	Paper ID	Author	Paper Title
16:00 ~ 16:15	5	Haotian Wang and Xintao Liu	Exploring Urban Odor Characteristics from Citizens' Perception: A Case Study of Hong Kong
16:15 ~ 16:30	32	Minda Ma, Shufan Zhang, Jinyue Yan and Nan Zhou	GLOBUS: Global building renovation potential by 2070
16:30 ~ 16:45	37	Tao Xu, Hongru Wang, Rujing Wang, He Meng, Yu Ji, Ying Zhang, Jianli Zhao and Jiani Xiang	Privacy-Enhanced Distributed Volt/VAR Coordination Control in Distributed Networks
16:45 ~ 17:00	39	Yinshuang Xia, Yujie Dong and Chao Zhang	Assessing additional CO2 emissions in China's power sector caused by drought event
17:00 ~ 17:15	57	Yongting Shen and Hongxing Yang	Design Principle of Indoor CO2 Capture System for Achieving Net Building Energy Conservation
17:15 ~ 17:30	62	Wenshuo Zhang, Dongsheng Jiao, Bin Zhao and Gang Pei	Experimental and numerical investigation of the effects of radiative cooling and photothermal conversion on buildings
17:30 ~ 17:45	76	Nan Yang, Yunqi Wang, Ying Du, Yuning Zhang and Shaoge Bi	Towards Urban Transportation Electrification Roadmap by Coordinating the Battery Electrical Buses and Diverse Travel Patterns
17:45 ~ 18:00	38	Shanshan Chen	The Exploration of urban planning for enhancing city resilience to urban heat
18:30 ~ 21:30	Banquet (All participants): Hotel ICON B1 Floor, Chinese Dinner		
Room: TU103 Session Name: Data-Driven Management and Efficiency Session Chair: Prof. Yanli LIU, Tianjin University; Dr. Siqi BU, The Hong Kong Polytechnic University;			
Time	Paper ID	Author	Paper Title
16:00 ~ 16:15	20	Rui Xie and Yue Chen	Privacy-Preserving Aggregated Load Forecasting Based on Vertical Federated Learning
16:15 ~ 16:30	25	Yuerong Zhu, Yunpeng Xiao, Haipeng Xie, Xiuli Wang, Yiping Chen and Rong Yan	Optimal Dispatching for Distribution Network with Resilience-oriented DLMPs

Day 1: May. 9
Oral Presentation

16:30 ~ 16:45	40	Shiqi Wang, Shengyou Wang and Chengxiang Zhuge	Planning on a Nationwide Electrified Freight Transport System with a Data-driven Integrated Approach
16:45 ~ 17:00	41	Jiangjie Qiu and Xiaonan Wang	Extraction of Scientific Chart Information Based on Multimodal Large Language Models
17:00 ~ 17:15	44	Ziqing Zhu, Siqi Bu and Ze Hu	Quantum-Enhanced Reinforcement Learning for Bidding Simulation in Electricity Market
17:15 ~ 17:30	67	Xiyuan Zhou, Yuji Cao, Yuan Zhong, Yuheng Cheng, Huan Zhao and Junhua Zhao	Large Language Model for Power System Scenario Generation Considering Weather Condition - A Case Study
17:30 ~ 17:45	70	Hongyu Long, Chenyang Yu and Jia Li	Can developing big data improve urban energy efficiency? A double machine learning based approach
17:45 ~ 18:00	90	Jingyi Liu, Yuning Chen and Tao Ma	Technical study on achieving high-efficiency color photovoltaic utilizing structural colors
18:30 ~ 21:30	Banquet (All participants): Hotel ICON B1 Floor, Chinese Dinner		

Day 2: May. 10
Oral Presentation

Room: TU101 Session 4: Sustainable Chemical Processes and Industry Session Chair: Dr. Lanyu LI, Tsinghua University; Dr. Ruijie MA, The Hong Kong Polytechnic University;			
Time	Paper ID	Author	Paper Title
14:00 ~ 14:15	21	Chun-Wei Chang, Wei-Yo Yu, Bu-Jine Liu, Dong Kyoo Park, Soo Nam Park, Changsik Choi and Yongman Choi	A High-Entropy Oxide Electrode for Electrocatalytic Water Splitting
14:15 ~ 14:30	26	Yongdan Li and Yushuai Sang	Lignin solvolysis to produce chemicals and fuels: the next generation of biorefining technologies
14:30 ~ 14:45	68	Lanyu Li, Yishen Tew, Xue Qun Chong and Xiaonan Wang	Low-Carbon Management of Chemical Industry Park Empowered by Large Language Model and Operational Optimization
14:45 ~ 15:00	81	Chong Li and Xuejing Yang	Nature-Inspired Interfacial Fe3+ Coordination for Enhanced Water Oxidation toward Impure Water Electrolysis
15:00 ~ 15:30	Coffee Break (V322)		
Room: TU103 Session 5: Technological Innovation and Policy Analysis Session Chair: Dr. Xintao LIU, The Hong Kong Polytechnic University; Dr. Meiyu GUO, Hong Kong Baptist University;			
Time	Paper ID	Author	Paper Title
14:00 ~ 14:15	27	Yibo Li, Juan Li, Mei Sun, Simin Guo and Yanzi Guo	Study on the incentive mechanism for technological innovation in the steel industry based on an integrated CGE model with multiple modules
14:15 ~ 14:30	56	Divya Suresh and Rajib Shaw	Agricultural Information Dissemination Systems in Tamil Nadu, India: A Review
14:30 ~ 14:45	59	Xiaohan Zhang and Yuekuan Zhou	Advanced hydrogen-driven internet of energy and hydrogen economy with lifecycle carbon intensity map in China
14:45 ~ 15:00	72	Li Ding	GHG Emission, National Characteristics and BRI Influence - An Empirical Analysis of China's Collaborators in the Oil and Gas Industry
15:00 ~ 15:30	Coffee Break (V322)		

May. 9

Young Scientist Panel

Room TU107 Session Name: Young Scientist Panel Session Chair: Prof. Jerry YAN			
Time	Paper ID	Author	Paper Title
16:00-16:30	3	Wenwen Du, Zhanping You, Xuemin Zhao, Camila Barreneche, Yulong Ding Ding and Xiaohui She	Liquid air storage tank with cold recovery and storage from boil-off gas with phase change materials for long-term energy storage
	6	Rui Jing and Meng Wang	Quantifying city-scale green roofs' energy saving potential
	8	Ruijie Ma and Gang Li	Revealing the underlying solvent effect on film morphology in high-efficiency organic solar cells through combined ex situ and in situ observations
	22	Pu Hong and Meiyu Guo	Assessment of Carbon and Water Footprints of Shale Gas Production in China
	66	Yunren Sui, Zengguang Sui and Wei Wu	Revolutionizing Passive Electronics Cooling by Hygroscopic Ionic Liquids
	74	Juan Wu and Hongsheng Wang	Solar hydrogen production by seawater electrolysis: recent advance, challenges, and future perspectives
16:30-17:00	Discussion		
17:00-17:30	77	Kun Xiao and Yujian Ye	CVaR Based Bidding Strategy for a PV-Storage System in Joined Electricity and Reserve Markets
	89	Qing Yu, Jian Xu, Jian Yuan and Haoran Zhang	A city scale multi-agent simulation model for electric vehicle fleet spatial temporal charging behavior abd trajectory modeling
	90	Jingyi Liu, Yuning Chen and Tao Ma	Technical study on achieving high-efficiency color photovoltaic utilizing structural colors
	91	Hao Xu and Yuntian Chen	Worth of Prior Knowledge for Enhancing Deep Learning
	23	Haitao Zhao	A robotic platform assisted perovskite materials synthesis
	28	Qiliang Wang, Gang Pei, Hongxing Yang and Yuehong Su	Experimental and numerical analysis of concentrating parabolic trough collectors integrated with semiconductor thermoelectric generators
17:30-18:00	Discussion		

May. 9

Poster Session 1

Room TU201 Session Name: Poster Session 1			
Time	Paper ID	Author	Paper Title
15:30-16:00	13	Xingda Guo, Jieming Yan and Shan Dai	Back to the Future - a climate adaptive rammed earth house design in Yunnan based on a data-driven design workflow
	17	Bin Gu, Mengfan Duan, Shenyang Ni and Dongliang Zhao	A novel method for increasing phase-change microcapsules in nanofiber textile through electrospinning
	24	Lu Chen and Ke Wang	The Synergistic Reduction Effect of Air Pollution and CO2 in road transportation —— Evidence from Chinese cities
	30	Bohan Zhang, Chang Wen and Mingtao Xu	In situ growth of ruthenium-iridium based oxides in reduced graphene oxide for boosted acidic water splitting
	34	Jiachen Yuan	An integrated approach of estimating demand response potential for residential air conditioning based on different households
	42	Jianghui Wen, Yu Zhu and Shixue Wang	Reaction Pathways for Thermal Runaway in Lithium-Ion Batteries
	46	Jiting Jian, Yucong Fan, Shixue Wang and Yu Zhu	Analysis of electrochemical impedance spectrum response characteristics of SOFC at different operating conditions
	65	Xiaohan Zhang and Yuekuan Zhou	Centralized or End-User Hydrogen Production? Optimizing the Hydrogen Pathway for Climate Change Mitigation
	78	Chuke Chen, Zhenqi Cao, Yiheng Xue and Wei-Qiang Chen	Mapping technologies to advance the material flow analysis

May. 10

Poster Session 2

Room TU201 Session Name: Poster Session 2			
Time	Paper ID	Author	Paper Title
10:30-11:00	14	Haoran Jiang and Shaozhi Hong	Exploring Service Patterns and Ridership Dynamics for Autonomous Buses: Focus on the Built Environment
	18	Xinyu Zhao, Mingfeng Sheng, Huajie Tang, Haodan Pan, Chenyue Guo and Dongliang Zhao	An electrochromic device based on reversible silver deposition for all-season temperature regulation on curved structures
	31	Han Yang, Zhao Zhu and Qing Yu	Rural Passenger, Cargo, and Postal Integration to Promote the Integrated Utilization of Rural Transportation Resources--A Case Study of China's Practical Exploration
	33	Xinyi Luo and Biying Yu	Industry Chain Risk Assessment for Low Carbon Transition of the Power Sector in China
	47	Danni Meng and Zhaohua Wang	Strategies to Mitigate Job Loss in China's Coal Power Units Phase Down Pathways under Climate Goals
	52	Youyuan Chen and Biying Yu	Optimization of energy storage deployment in China's power system under multiple cost uncertainties
	60	Ke Liu and Yanli Liu	Punctual V2G Scheduling Circle: Integrating Traffic Dynamics and User Elasticity to Enhance Local and Transfer V2G Capabilities
	61	Zhengyu Shi, Naifu Zhang, Bohao Chen and Libo Wu	Policy Simulation of Power Green Transition in Competitive Market
	64	Xuanyue Zhang, Yun Lin, Shenghan Ke, Deng Pan and Beijinni Li	Towards Sustainable University: A Multidisciplinary Systematic Review of ESG Practices in Higher Education Institutions
	73	Chong Zhang, Xiaoxia Bai and Hui Liu	Performance Evaluation of Shallow Geothermal Ventilation System for Healthy and Low-Carbon Buildings in China

Presentation Guide

Nexus Forum 2024 will be held on-site. All accepted papers will be oral presentations and poster presentations.

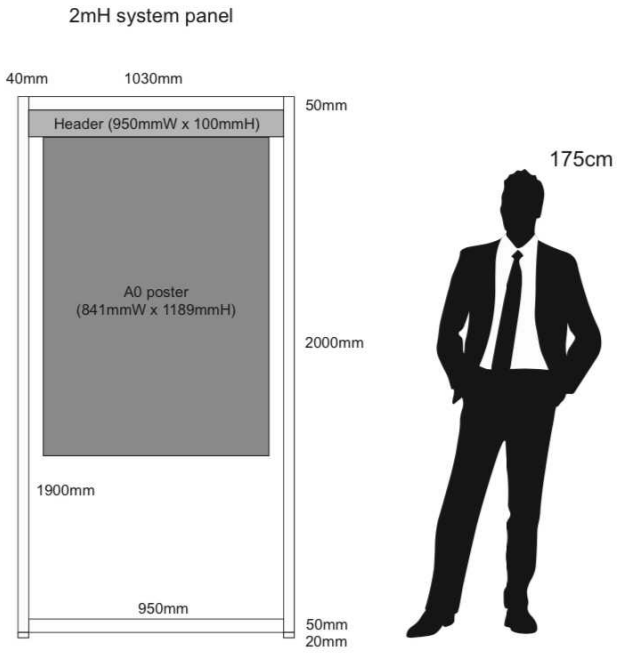
Oral Presentation

Speakers are required to copy their slides to the computer of the conference room in advance. Your pr esentation should follow your allocated time. **It is 15mins for each paper, including a 12mins presentat ion and a 3mins Q&A.**

Poster Presentation

Posters are required to provide the exact size (**A0 poster: 841mm W * 1189mm H**). Authors need to **print and bring the poster by themselves**. The poster sessions are equal to the oral sessions and require authors to attend during their presentation time.

Please refer to the latest conference program regularly, which can be downloaded from the conference website：https://nexusforum.org/nexus2024/program.html for your presentation time.



Useful Information - Registration

Registration

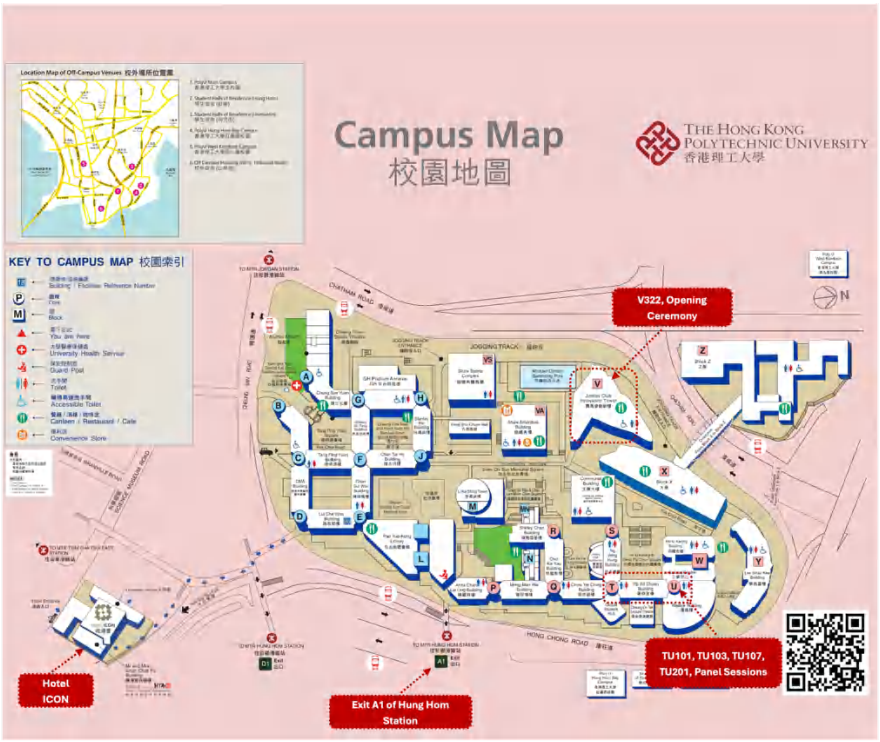
Official Registration Time

Date	Registration Venue	HK Time
May 8, 2024 (Wednesday)	V322	14:00 ~ 18:00
May 9, 2024 (Thursday)	V322	9:00 ~ 12:00
	TU201	14:00 ~ 18:00

*Note that the registration is always open during the conference. The above is the official centralized registration time. Please contact WeChat (Qu-est-ce-que-tu-es0)/ Email (nexus2024@nexusforum. org) for registration outside of the official registration time.

* The Opening Ceremony will be held in **V322, Block V, PolyU Main Campus**.

* The Panel Sessions will be held in **TU101, TU103, TU107, TU201, Block T and Block U, PolyU Main Campus**.



Useful Information - Registration

WhatsApp/WeChat Group (important info)

Please scan and join our Nexus Forum 2024 WhatsApp group chat or WeChat group chat for the latest updates and announcements.

https://chat.whatsapp.com/BvqyOWAHLY82e22SsH8422

WhatsApp Group Chat

WeChat Group Chat

please add the WeChat ID of the Nexus Forum 2024 volunteer: **Qu-est-ce-que-tu-es0 or guozhiling254391**

Useful Information

- Meal, Banquet, Visit

Meal, Banquet, and Visit Recommendations

Meal and Banquet arrangement

	May 9	May 10
Coffee Break	Morning V322	Morning TU201
	Afternoon TU201	Afternoon V322
Lunch	Communal Building 4th floor of Block S(聚賢樓)	Communal Building 4th floor of Block S(聚賢樓)
Banquet	Hotel ICON B1 Floor, Chinese Dinner	N/A

Visit Recommendations

Here are 10 notable attractions in Hong Kong:

1. Victoria Peak
- Address: 1 Lugard Rd, Hong Kong
- Route: Take the Peak Tram from Garden Road
- Ticket: HKD 52 for a return tram ticket
- Recommended time: 1-2 hours

2. Tsim Sha Tsui Promenade
- Address: Tsim Sha Tsui, Kowloon
- Route: MTR to Tsim Sha Tsui Station
- Ticket: Free
- Recommended time: 1-2 hours

3. Disneyland Hong Kong
- Address: Lantau Island, Hong Kong
- Route: MTR to Disneyland Resort Station
- Ticket: Around HKD 639 for an adult one-day ticket
- Recommended time: Full day

4. Ocean Park
- Address: Aberdeen, Hong Kong
- Route: Bus 629 from Admiralty MTR Station
- Ticket: About HKD 498 for an adult ticket
- Recommended time: Full day

Useful Information

- Meal, Banquet, Visit

5. Temple Street Night Market
- Address: Temple Street, Yau Ma Tei, Kowloon
- Route: MTR to Yau Ma Tei Station
- Ticket: Free
- Recommended time: 1-2 hours

6. Lan Kwai Fong
- Address: Central, Hong Kong
- Route: MTR to Central Station
- Ticket: Free
- Recommended time: Evening

7. The Big Buddha (Tian Tan Buddha)
- Address: Ngong Ping, Lantau Island
- Route: MTR to Tung Chung then take Ngong Ping 360 cable car
- Ticket: Cable car around HKD 235 for a standard round trip
- Recommended time: Half day

8. Wong Tai Sin Temple
- Address: Wong Tai Sin, Kowloon
- Route: MTR to Wong Tai Sin Station
- Ticket: Free
- Recommended time: 1-2 hours

9. Stanley Market
- Address: Stanley, Hong Kong Island
- Route: Bus 6, 6A, 6X, 66 or 260 from Exchange Square bus terminus
- Ticket: Free
- Recommended time: 2-3 hours

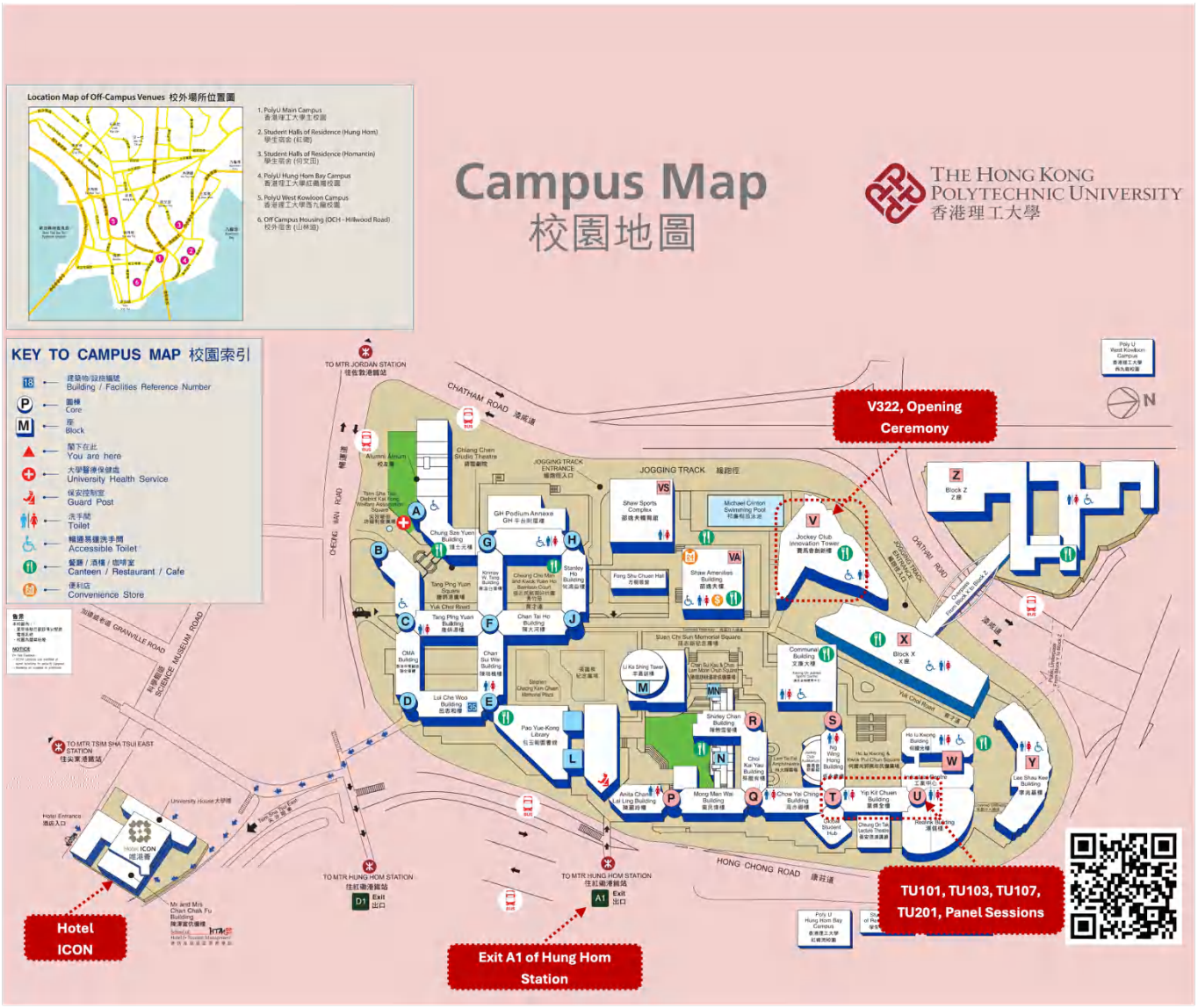
10. Mong Kok Ladies' Market
- Address: Tung Choi Street, Mong Kok, Kowloon
- Route: MTR to Mong Kok Station
- Ticket: Free
- Recommended time: 1-2 hours

Useful Information - Travel

Getting to the Conference Venue

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

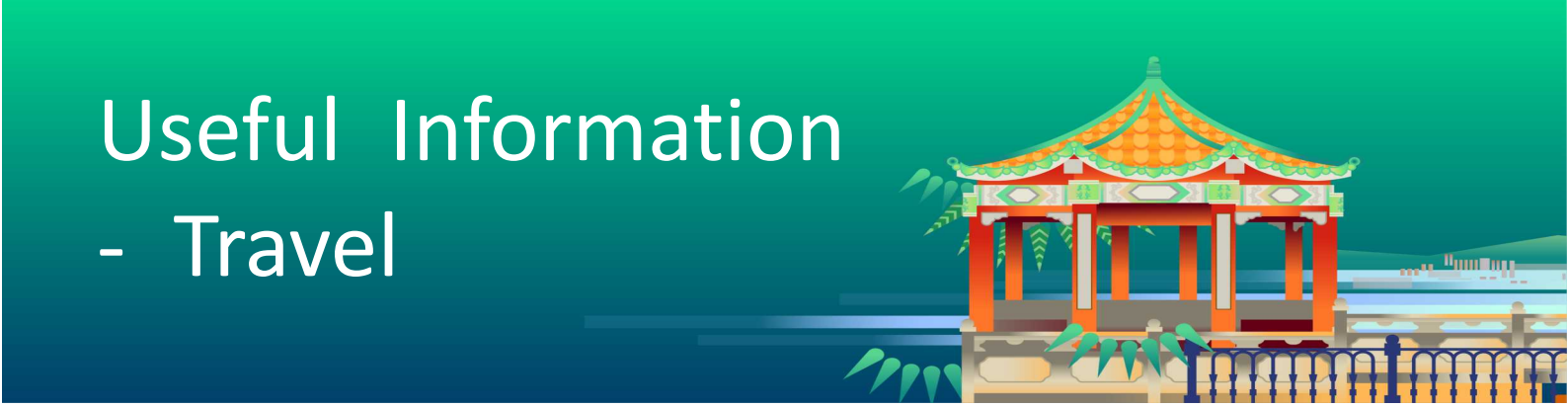
The Hong Kong Polytechnic University (Map)



- **By MTR**

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

Useful Information - Travel



- **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. Details for taxi fares are available here Additional charges occur for large baggage. The tunnel tolls are both payable by a passenger for cross-harbour hiring.

International travel

All air travelers from other countries will arrive at Hong Kong International Airport. For details on the options of ground transportation to and from the airport, please visit: https://www.hongkongairport.com/en/transport/to-from-airport/

From the Airport to PolyU

- **By MTR**

First, take Airport Express from Hong Kong International Airport to Tsing Yi Station. Next, interchange at Tsing Yi Station Platform 4 to Tung Chung Line (towards Hong Kong Station). Then, interchange at Nam Cheong Station Platform 2 to Tuen Ma Line (to Wu Kai Sha Station). Get off at Hung Hom Station and take the footbridge at Exit A1 or D1 to the campus. A single journey takes around 40 minutes for the ride, and costs HK$65 (with Octopus) / HK$70 (without Octopus). Please refer to the MTR website for details.

- **By Bus**

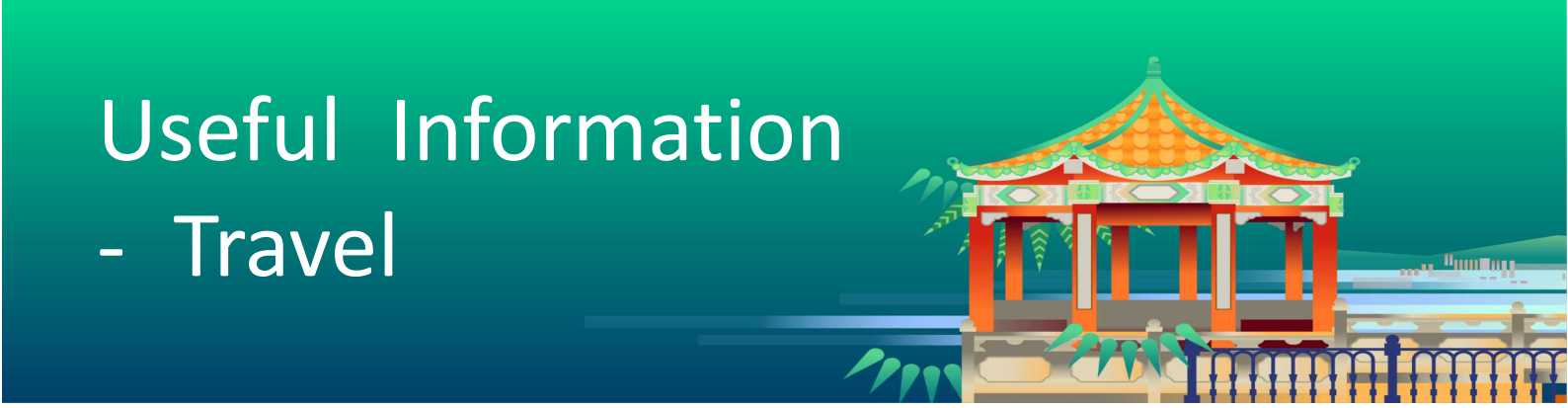
Take Cityflyer route A21 from the Airport (Ground Transportation Centre) Bus Terminus to Hung Hom Station. Take the footbridge at Hung Hom Station Exit D1 or A1 that leads you to the campus. It takes around 75 mins for the ride and costs HK$33. Please refer to the Citybus & NWFB website for details.

From Mainland China and Macao to PolyU

- **By High-Speed Rail (Hong Kong Section)**

The Hong 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 for details. To ensure timely departure, passengers are advised to allow sufficient time for completing security checks and immigration formalities at Hong Kong

Useful Information - Travel



West Kowloon Station. Normally, travelers can complete the above procedures smoothly within 30 minutes. Passport holders or travelers using traditional immigration counters may require additional time for the clearance process. After clearance, first, get off at Hong Kong West Kowloon Station and get on the train at Austin. Passengers can reach their destination via an overhead bridge/ pedestrian tunnel. Next, the interchange at Austin Platform 2 to Tune Ma Line (towards Wu Kai Sha Station). Get off at Hung Hom Station and take the footbridge at Exit A1 or D1 to the campus. A single journey (from Hong Kong West Kowloon Station to Hung Hom Station) takes around 11 minutes for the ride, and costs HK$5.9 (with Octopus) / HK$6.5 (without Octopus). Please refer to the MTR website for details.

- **Via Hong Kong-Zhuhai-Macao Bridge (HZMB)**

The Hong Kong-Zhuhai-Macao Bridge operates 24 hours a day and puts major cities in the Pearl River Delta within a three hours commute from Hong Kong. It will take only 40 minutes to travel the distance of approximately 42km from Hong Kong Port to Zhuhai Port and Macao Port. Cross-boundary visitors should possess a valid travel document. Non-cross-boundary travellers should possess a valid Closed Area Permit for entering the Closed Area of the HZMB Hong Kong Port.

For details on local public transport serving the Hong Kong Port, please refer to the HZMB website and the HKSAR Transport Department website.

Useful Information - Hotel

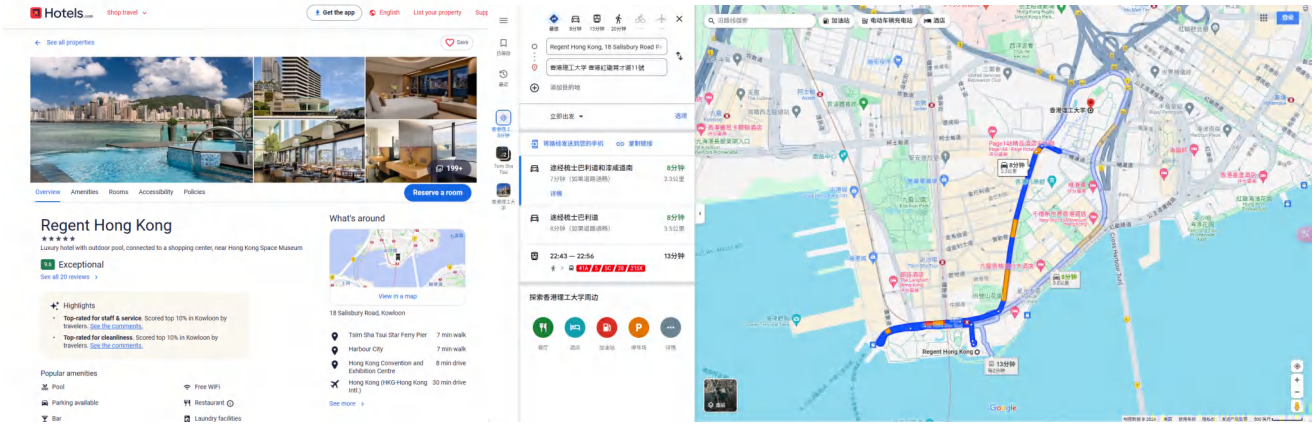
Nearby Hotel Information

Hotel	Hotel Rating	Room Type & Room Rate	Walking Distance to PolyU
Hotel ICON	★★★★★	ICON City View Room (Size: 36 sqm) HK$1,800 - HK$2,000 + 10% service charge per room per night (Room rates are subject to change according to availability)	~ 5 minutes
New World Millennium Hong Kong Hotel	★★★★★	Superior Rooms/ City View Rooms/ Deluxe City View rooms (Size: 33-39 sqm) HK$1,600 - $1,900 per room per night	~ 7 minutes
InterContinental Grand Stanford Hong Kong	★★★★★	Classic Room (Size: 30-32 sqm) HK$1,270 + 10% service charge per room per night (Supplement charge for buffet breakfast at HK$160 + 10% service charge per person per day)	~ 7 minutes
Harbour Plaza Metropolis HK	★★★★	Superior Room/ Deluxe Room (Size: 25-27 sqm) • Superior Rooms at HK$850 + 10% service charge per room per night • Deluxe Rooms at HK$1,050 + 10% service charge per room per night • Special supplement at HK$120 per person per meal with advance purchase upon making reservations	~ 10 minutes
Regal Kowloon Hotel	★★★★	$900 - $1,200 per room per night	~ 7 minutes
Best Western Plus Hotel Kowloon	★★★	$650 - $750 per room per night	~ 10 minutes

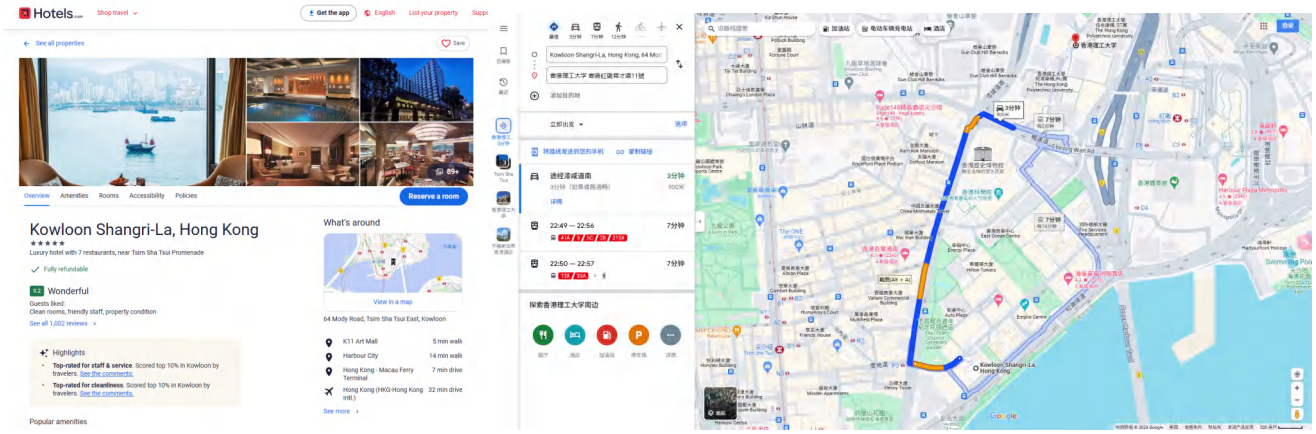
Useful Information - Hotel

More Hotel Options

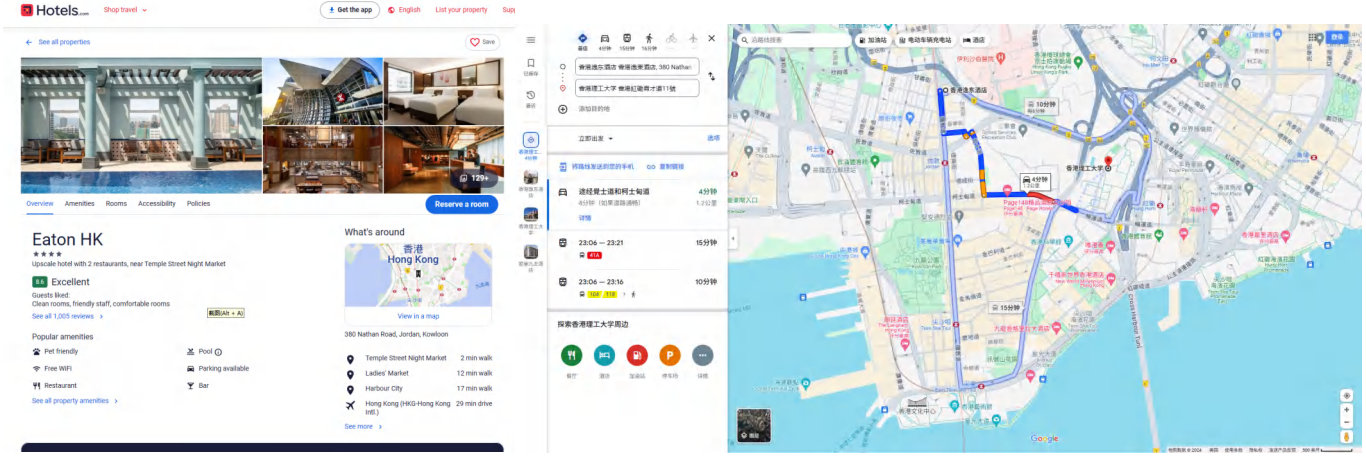
1. Regent Hong Kong



2. Kowloon Shangri-La, Hong Kong

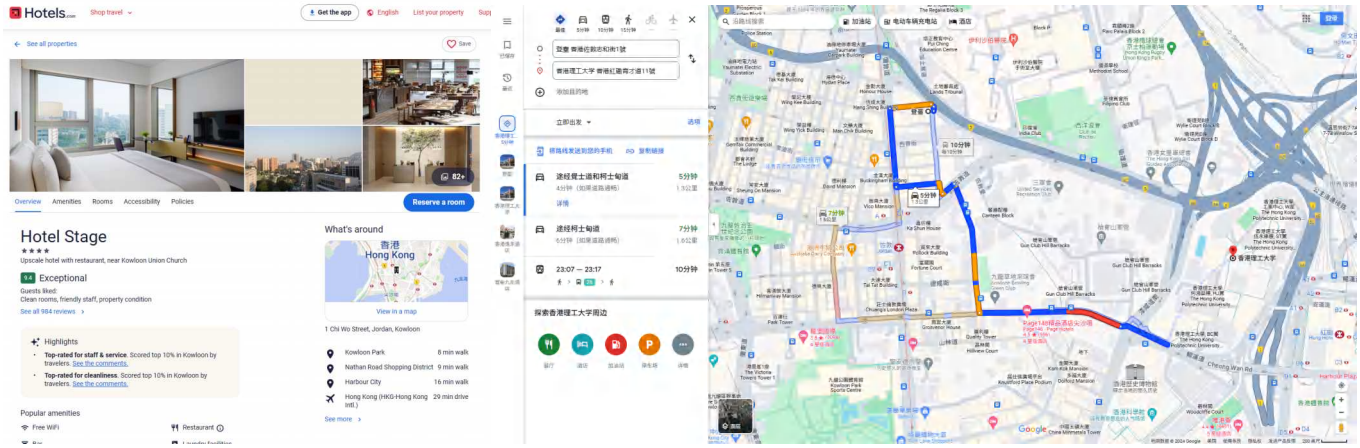


3. Eaton HK

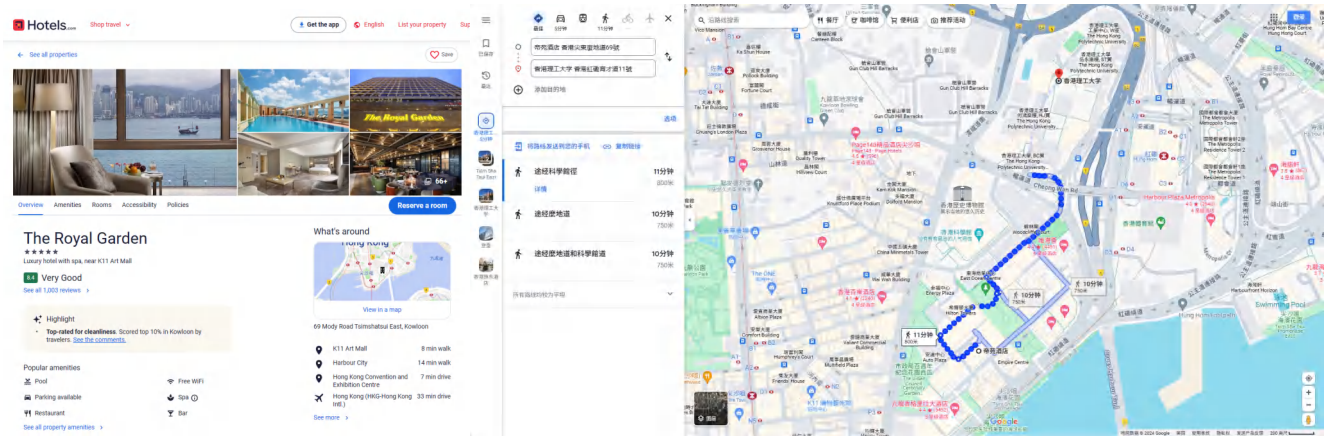


Useful Information - Hotel

4. Hotel Stage

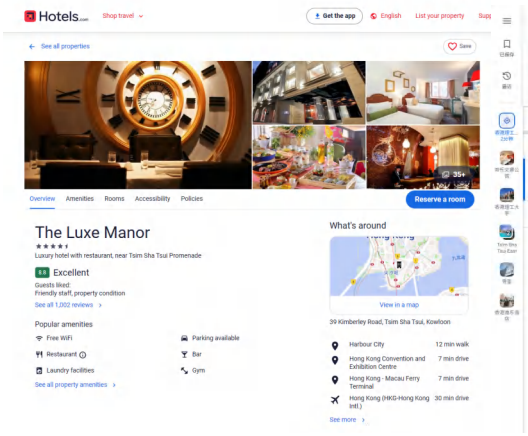


5. The Royal Garden



6. The Luxe Manor

Useful Information - Hotel



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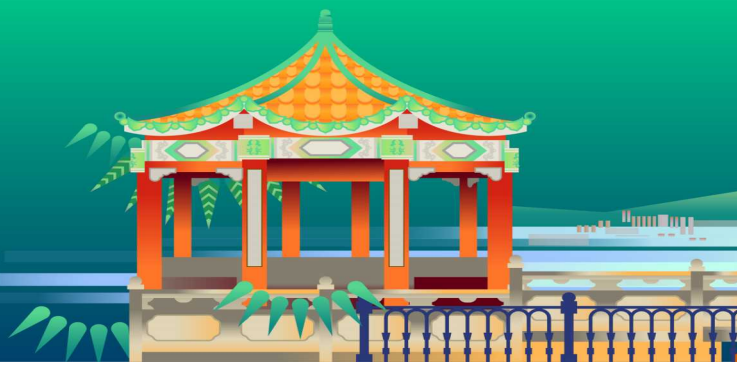

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香港太陽能學會
Solar Energy Society of Hong Kong

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东方理工高等研究院

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

About HK

About Hong Kong

Hong Kong, a vibrant city-state on China's south coast, is a melting pot of cultures with a rich history and a stunning skyline. Known for its bustling streets, culinary delights, and scenic views, Hong Kong offers a unique blend of Eastern and Western influences. The region comprises Hong Kong Island, Kowloon, the New Territories, and various smaller islands. With its efficient public transport system, exploring the city is convenient for visitors. From shopping and dining to nature and heritage, Hong Kong caters to all interests.

Here are 10 notable attractions in Hong Kong:

1. Victoria Peak
- Address: 1 Lugard Rd, Hong Kong
- Route: Take the Peak Tram from Garden Road
- Ticket: HKD 52 for a return tram ticket
- Recommended time: 1-2 hours

2. Tsim Sha Tsui Promenade
- Address: Tsim Sha Tsui, Kowloon
- Route: MTR to Tsim Sha Tsui Station
- Ticket: Free
- Recommended time: 1-2 hours

3. Disneyland Hong Kong
- Address: Lantau Island, Hong Kong
- Route: MTR to Disneyland Resort Station
- Ticket: Around HKD 639 for an adult one-day ticket
- Recommended time: Full day

4. Ocean Park
- Address: Aberdeen, Hong Kong
- Route: Bus 629 from Admiralty MTR Station
- Ticket: About HKD 498 for an adult ticket
- Recommended time: Full day

5. Temple Street Night Market
- Address: Temple Street, Yau Ma Tei, Kowloon
- Route: MTR to Yau Ma Tei Station
- Ticket: Free
- Recommended time: 1-2 hours

6. Lan Kwai Fong
- Address: Central, Hong Kong
- Route: MTR to Central Station
- Ticket: Free
- Recommended time: Evening

7. The Big Buddha (Tian Tan Buddha)
- Address: Ngong Ping, Lantau Island
- Route: MTR to Tung Chung then take Ngong Ping 360 cable car
- Ticket: Cable car around HKD 235 for a standard round trip
- Recommended time: Half day

8. Wong Tai Sin Temple
- Address: Wong Tai Sin, Kowloon
- Route: MTR to Wong Tai Sin Station

About HK

- Ticket: Free
- Recommended time: 1-2 hours

9. Stanley Market
- Address: Stanley, Hong Kong Island
- Route: Bus 6, 6A, 6X, 66 or 260 from Exchange Square bus terminus
- Ticket: Free
- Recommended time: 2-3 hours

10. Mong Kok Ladies' Market
- Address: Tung Choi Street, Mong Kok, Kowloon
- Route: MTR to Mong Kok Station
- Ticket: Free
- Recommended time: 1-2 hours

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