



# RESEARCH



School of Energy and Environment

香港城市大學  
City University of Hong Kong



# ABOUT US

## Vision

Established in 2009, the School of Energy and Environment (SEE) at City University of Hong Kong aims to be a leading School specializing in cutting-edge research in energy and environment, in the training of energy and environment professionals, and in knowledge transfer for societal benefits.

## Mission

- Advancing research and development, fostering knowledge transfer in targeted themes of benefit to societal needs in energy, environment, and sustainability;
- Preparing leaders and practitioners to address environmental and energy needs in a rapidly decarbonizing world and build a sustainable future;
- Maintaining a collaborative and supportive atmosphere for students, faculty, alumni and other stakeholders in advancing our interdisciplinary research and educational objectives.

## Academic Programmes

Undergraduate Programmes	Postgraduate Programmes
<p><b>Major Programmes</b></p> <ul style="list-style-type: none"><li>• Major in Energy Science and Engineering</li><li>• Major in Environmental Science and Engineering</li></ul> <p><b>Minor Programmes</b></p> <ul style="list-style-type: none"><li>• Minor in Atmospheric and Climate Science</li><li>• Minor in Energy Technology</li><li>• Minor in Sustainability</li></ul>	<p><b>Research Degree Programmes</b></p> <ul style="list-style-type: none"><li>• Master of Philosophy (M.Phil.)</li><li>• Doctor of Philosophy (Ph.D.)</li></ul> <p><b>Taught Postgraduate Programme</b></p> <ul style="list-style-type: none"><li>• Master of Science in Energy and Environment (M.Sc.)</li></ul>

## Student Population\*

Undergraduate Students:

**241**

M.Sc. Students:

**104**

Ph.D. Students:

**113**

(\* as of September 2022)

## Faculty

The School has 30 full-time faculty members, including 1 Emeritus Professor, 3 Chair Professors, 4 Professors, 9 Associate Professors and 13 Assistant Professors.

## Research Overview

### ENERGY

- Conversion & Generation
- Efficiency & Storage

### ENVIRONMENT

- Atmosphere & Climate
- Water & Waste

### SUSTAINABILITY & POLICY

## Research Grants and Industrial Collaboration (2009-2022)

- 454 approved research projects
- Over HK\$299 million approved funding

(Source: ERIC – Executive Research Information System)

## Dr. Sam H. Y. HSU

Assistant Professor



To know more:



Email: sam.hyhsu@cityu.edu.hk

Phone: +(852)-3442-5412

### Biography

Dr. Sam H. Y. Hsu obtained his Ph.D. under supervision of Professor Kirk S. Schanze at University of Florida with focusing on photophysical behaviors of functional metallopolymer materials for solar energy and optoelectronic applications. After that, he received the two-year postdoctoral and research associate's appointments respectively with Professor Allen J. Bard and Professor Edward T. Yu in Center for Electrochemistry as well as Department of Electrical and Computer Engineering at University of Texas at Austin. During the period of his postdoc and research associate, he completed many outstanding multidisciplinary projects. The area of his expertise stretches from material design to new related disciplines involving material characterization and diverse applications, such as solar fuels, organic and inorganic photovoltaic cells, wastewater treatment and food waste management.

### Research Interests

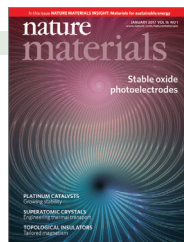
- Energy engineering (solar fuels, photovoltaics and optoelectronic devices)
- Environmental engineering (wastewater treatment, food waste treatment)
- Materials design (e.g. organometallics, alloy, bio-materials, nanomaterials, perovskites and metallopolymer)
- Photophysics, photochemistry, electrochemistry and photoelectrochemistry

### Research Achievements/Industrial Collaborations

- Hybrid perovskite photovoltaic devices for electricity generation
- Photoelectrochemical solar fuel devices for energy production
- Bio-photoelectrochemical hybrid devices for wastewater treatment and hydrogen generation
- Microbial photoelectrochemical cell for food waste treatment

### Recent Journal Publications

- L. Ji, **H-Y Hsu**, X. Li, K. Huang, Y. Zhang, J. C. Lee, A. J. Bard and E. T. Yu, "Metal-Oxide-Semiconductor Photoelectrodes Employing Local Dielectric Breakdown and Integrating Antireflection Coating", *Nature Materials*, 2017, 16, 127–131.
- **H-Y Hsu**, L. Ji, H. S. Ahn, J. Zhao, E. T. Yu and A. J. Bard, "A Liquid Junction Photoelectrochemical Solar Cells Based on p-Type  $\text{MeNH}_3\text{PbI}_3$  Perovskite with 1.05 V Open-Circuit Photovoltage", *J. Am. Chem. Soc.*, 2015, 137, 14758–14764.
- **H-Y Hsu**, L. Ji, M. Du, J. Zhao, E. T. Yu and A. J. Bard, "Optimization of Lead-free Organic–inorganic Tin(II) Halide Perovskite Semiconductors by Scanning Electrochemical Microscopy", *Electrochim Acta*, 2016, 220, 205–210.



## Professor Alex K. Y. JEN

Lee Shau Kee Chair Professor of Materials Science  
Director, Hong Kong Institute for Clean Energy  
Chair Professor, Chemistry and Materials Science  
(Joint appointment with Department of Materials Science and Department of Chemistry)

To Know more:



Email: alexjen@cityu.edu.hk

Phone: +(852)-3442-8451



### Biography

Professor Alex Jen is the Director of Hong Kong Institute for Clean Energy, the Lee Shau Kee Chair Professor of Materials Science and Chair Professor of Chemistry and Materials Science of the City University of Hong Kong. He had also served as the Provost of City University of Hong Kong during 2016-2020. He received his B.S. from the National Tsing Hua University in Taiwan and Ph.D. from the University of Pennsylvania in USA. Before arriving the CityU, he served as the Boeing-Johnson Chair Professor and Chair of the Department of Materials Science & Engineering at the University of Washington, Seattle. He was also appointed as Chief Scientist for the Clean Energy Institute endowed by the Washington State Governor. He is a distinguished researcher with more than 1,000 publications, 75,000 citations, and an H-index of 142. He has co-invented 65 patents and invention disclosures. Due to his exemplary research performance, he was selected as the recipient of “Outstanding Research Award” by CityU in 2021. His interdisciplinary research covers organic/hybrid functional materials and devices for photonics, energy, sensors, and nanomedicine.

For his pioneering contributions in organic photonics and electronics, Prof. Jen was elected as an Academician by both the European Academy of Sciences and the Washington State Academy of Sciences. He is also a Fellow of several professional societies, including AAAS, MRS, ACS, PMSE, OSA, SPIE. He was named by the Times Higher Education (THE) in 2018 as one of the “Top 10 university researchers in Perovskite Solar Cell Research”. In addition, he was recognized by Thomson Reuters as one of the “World’s Most Influential Scientific Minds of 2015 and 2016” and as a “Highly Cited researcher” in materials science from 2014-2021.

He was also appointed as the Changjiang Endowed Chair by the Ministry of Education, Chair Professor (Zhejiang Univ.), the World Class University Professor by the Korean Research Foundation, and the Distinguished Chair Professor by the National Taiwan University. He also demonstrated strong capability in technology transfer involving in four start-up companies, and was the founder of the Institute of Advanced Materials for Energy (i-AME) of the University of Washington.

### Research Interests

- Utilizing molecular, polymeric, and biomacromolecular self-assembly to create ordered arrangement of organic and inorganic functional materials for photonics, opto-electronics, nanomedicine, and nanotechnology.
- Employing the “molecular engineering” approach to tailor size, shape, sequence, and functionality of organic/hybrid functional materials and explore their applications.

### Research Achievements/Industrial Collaborations

- Elected as the Foreign Member of the European Academy of Sciences, 2019
- Outstanding Research Award, City University of Hong Kong, 2021
- Top 1% “Highly Cited Researcher” in Materials Science by Clarivate Analytics from 2014-2021
- Top 2% “Highly Cited Researcher” by the Stanford University, 2021
- Selected as the “Top 10 Researchers in the World Working on Perovskite Solar Cells” by Times Higher Education in 2018

### Recent Journal Publications

- “Dilution Effect for Highly Efficient Multiple-Component Organic Solar Cells”, L. Zuo, S. B. Jo, Y. K. Li, Y. Meng, R. J. Stoddard, Y. Liu, F. Lin, X. Shi, F. Liu, H. W. Hillhouse, D. S. Ginger, H. Chen, **A. K-Y. Jen**, *Nature Nanotech*, 2022, 17, 53.
- “2D Metal–Organic Framework for Stable Perovskite Solar Cells with Minimized Lead Leakage”, S. Wu, Z. Li, M. Q. Li, Y. Diao, F. Lin, T. Liu, J. Zhang, P. Tieu, W. Gao, F. Qi, X. Pan, Z. Xu, Z. Zhu, **A. K-Y. Jen**, *Nature Nanotech.*, 2020, 15, 934.
- “Pseudo-Bilayer Architecture Enables High-Performance Organic Solar Cells with Enhanced Exciton Diffusion Length”, K. Jiang, J. Zhang, Z. Peng, F. Lin, S. Wu, Z. Li, Y. Chen, H. Yan, H. Ade, Z. Zhu, **A. K-Y. Jen**, *Nature Commun.* 2021, 12, 468.

## Professor Yun Hau NG

Professor



To Know more:



Email: [yunhau.ng@cityu.edu.hk](mailto:yunhau.ng@cityu.edu.hk)

Phone: +(852)-3442-2460

### Biography

Professor Yun Hau Ng received his Ph.D. from Osaka University in 2009. He spent a brief research stay at Professor Prashant Kamat (EIC of ACS Energy Letters)'s group at Notre Dame., In 2014, Prof. Ng was appointed as a lecturer in the School of Chemical Engineering, University of New South Wales (UNSW Sydney) and was promoted to a tenured Senior Lecturer in 2016. He joined the City University of Hong Kong in 2018

Prof. Ng has research interest in the development of novel photoactive semiconductors system for sunlight energy-to-chemicals conversion and storage. Focusing on these topics, he has secured more than HK\$25 million research funding from various sources including the Hong Kong Research Grant Council (RGC) and Australian Research Council (ARC). He has published more than 130 peer-reviewed journal articles including well-recognised journals such as Chem. Rev., Chem. Soc. Rev., Energy Environ. Sci, J. Am. Chem. Soc., Angew. Chem. Int. Ed., Adv. Mater., and Adv. Energy Mater. He currently has 11 papers recognised as ESI Top 1% Highly Cited Paper. He has attracted >8000 times of total citation to date. Prof. Ng's works have been selected as Journal Cover and Frontispiece in reputable journals, including in Adv. Mater., Adv. Energy Mater., Small, and J. Mater. Chem. A. Dr. Ng has delivered >30 keynote and invited talks at international conferences. He is also serving as a grant reviewer Australian Research Council (ARC), European Research Council (ERC), European Science Foundation (ESF) and etc.

Prof. Ng has received a number of prestigious recognition from the international community. He was recently awarded the 2019 Asia-Pacific Economic Cooperation (APEC) Science Prize for Innovation, Research and Education (ASPIRE). He was also the recipient of The Distinguished Lectureship Award from the Chemical Society of Japan in 2018. In 2013, he was named the Honda-Fujishima Prize winner as the first non-Japanese recipient by the Electrochemical Society of Japan, in recognition of his work in the area of photo-driven water splitting. He is also an Emerging Investigator in Energy Materials selected by RSC J. Mater. Chem. A in 2016.

### Research Interests

- Suspension-type nanoparticulate photocatalytic water splitting
- Photoelectrochemical water splitting
- Electrochemical carbon dioxide reduction or conversion assisted with light
- Other photocatalytic reactions for energy and environmental applications

### Research Achievements/Industrial Collaborations

- 2019 Asia-Pacific Economic Cooperation (APEC) Science Prize for Innovation, Research and Education (ASPIRE)
- 2018 Distinguished Lectureship Award by the Chemical Society of Japan
- 2017 John A. Brodie Medal by ENGINEERS Australia
- 2016 Emerging Investigator by J. Mater. Chem. (Royal Society of Chemistry)
- 2015 Theo Murphy Frontiers of Science Award, by the Theo Murphy Fund, Royal Society of London
- 2013 Honda-Fujishima Prize, by the Electrochemical Society of Japan

### Recent Journal Publications

- H. L. Tan, F. F. Abdi, **Y. H. Ng**, Heterogeneous Photocatalyst: an Overview of Classic and Modern Approaches for Optical, Electronic, and Charge Dynamics Evaluation, Chemical Society Reviews 2019, 48 (5), 1255.
- C. Y. Toe, Z. Zheng, H. Wu, J. Scott, R. Amal, **Y. H. Ng**, Photocorrosion of Cuprous Oxide in Hydrogen Production: Rationalising Self-oxidation or Self-reduction, Angewandte Chemie International Edition 2018, 57 (41), 13613.
- S. N. Lou, N. Sharma, D. Goonetilleke, W. H. Saputera, T. M. Leoni, P. Brockbank, S. Lim, D. W. Wang, J. Scott, R. Amal, **Y. H. Ng**, An Operando Mechanistic Evaluation of a Solar-Rechargeable Sodium-ion Intercalation Battery, Advanced Energy Materials 2017, 7 (19), 1700545. (Journal Cover)

## Dr. Sai Kishore RAVI

Assistant Professor



To Know more:



Email: [skravi@cityu.edu.hk](mailto:skravi@cityu.edu.hk)

Phone: +(852)-3442-6702

### Biography

Dr. Sai Kishore Ravi's research aims to bridge materials science and bioscience in designing functional devices for clean energy and clean water technologies using biogenic, biohybrid, and bioinspired materials, blurring the line between "natural" and "artificial".

Dr. Ravi earned his Ph.D. from the Department of Materials Science & Engineering at the National University of Singapore (NUS), working on biohybrid energy conversion/storage devices. His doctoral research involved studying natural biological complexes in plants and bacteria from a materials science perspective and exploiting the light-harvesting and charge transport mechanisms in the natural systems for energy and optoelectronic applications. After graduation, he continued at NUS as a post-doctoral researcher, working on semi-artificial photosynthesis. As part of his Ph.D. and post-doctoral research at NUS, Dr. Ravi designed semi-artificial device architectures for photovoltaics, photocapacitors, and tactile sensors. His works have been published in prestigious journals like *Advanced Materials*, *Advanced Energy Materials*, *Advanced Functional Materials*, *Energy & Environmental Science*, *Nature Communications*, and *Science Advances*, and also won NUS's Annual Best Publication Awards in Material Science for the years 2016, 2017 and 2018.

Dr. Ravi's research experience extends to developing functional materials for air filtration, solar desalination, and atmospheric water harvesting. His work on the Nanofibrous Air Filter won the "Prestigious Engineering Achievement Award 2018" awarded by the Institution of Engineers, Singapore (IES). The air filter has been patented (US 10,682,602 B2) and licensed to an Indian multinational company.

Dr. Ravi has also served as an Associate Editor for renowned journals like *Advanced Materials*, *Advanced Energy Materials*, *Advanced Energy & Sustainability Research*, *Advanced Materials Technologies*, and *Energy Technology*.

### Research Interests

- Solar Fuels (semi-artificial photosynthesis, green hydrogen, photocatalytic/bio-catalytic CO<sub>2</sub> reduction)
- Water-Energy Nexus (light-mediated/bio-catalytic water treatment, wastewater-to-energy technologies, solar desalination)
- Sustainable Biogenic Electronics (bio-capacitors, self-powered tactile sensors and e-skins)
- Functional Nanofibers (air-filters, e-textiles, and personal thermal management)

### Research Achievements/Industrial Collaborations

- NUS Annual Best Publication Awards in Materials Science – 2016, 2017, 2018
- "Prestigious Engineering Achievement Award 2018" from the Institution of Engineers, Singapore (IES).
- US Patent on the Nanofibrous Air Filter successfully licensed to industrial partners in Singapore, Brunei, and India

### Recent Journal Publications

- **SK Ravi**, Y Zhang, Y Wang, DK Nandakumar, W Sun, MR Jones, SC Tan. Optical Shading Induces an In-Plane Potential Gradient in a Semiartificial Photosynthetic System Bringing Photoelectric Synergy *Advanced Energy Materials* 9 (35), 1901449 (2019)
- **SK Ravi**, P Rawding, AM Elshahawy, K Huang, W Sun, F Zhao, J Wang, MR Jones, and SC Tan. Photosynthetic apparatus of *Rhodobacter sphaeroides* exhibits prolonged charge storage *Nature Communications* 10 (1), 1-10 (2019)
- **SK Ravi**, VK Singh, L Suresh, C Ku, V Sanjairaj, DK Nandakumar, Y Chen, W Sun, PHL Sit, SC Tan. Hydro-Assisted Self-Regenerating Brominated N-Alkylated Thiophene Diketopyrrolopyrrole Dye Nanofibers—A Sustainable Synthesis Route for Renewable Air Filter Materials *Small* 16 (14), 1906319 (2020)

## Dr. Jian WANG

Assistant Professor



To Know more:



Email: [jian.wang@cityu.edu.hk](mailto:jian.wang@cityu.edu.hk)

Phone: +(852)-3442-9285

### Biography

Dr. Jian Wang obtained his B.Eng. degree in Energy, Power System, and Automation Engineering from Xi'an Jiaotong University (XJTU) in 2013. During his undergraduate life, he obtained the National Scholarship twice from the Ministry of Education of The People's Republic of China and was selected as the top 15 finalist of the Outstanding Student Model of XJTU (highest honor with ten awardees out of all undergraduates in XJTU). After completing the undergraduate education, he took one year of postgraduate course at XJTU majoring in solid mechanics, and then he moved to the Hong Kong University of Science and Technology (HKUST) for Ph.D study. In 2017, he visited Northwestern University (USA) working with Professor. Sossina Haile on developing solid oxide fuel cells, and in 2018 he received Ph.D degree from HKUST. Before joining the School of Energy and Environment, City University of Hong Kong, he worked as the SNU Science Fellow researcher at Seoul National University. Dr. Wang's research focuses on sustainable energy conversion and storage devices, e.g., fuel cells, electrolyzers, and batteries, with a particular interest in the dynamic electrochemical energy process.

### Research Interests

- Operando monitoring and in-situ modulation of electrochemical energy process
- Developing sustainable energy devices (Fuel cells, Electrolyzers, Vehicle batteries)
- CO<sub>2</sub> splitting and reduction technology
- Environmental and Economic analysis & optimization of energy systems
- Thermal management of electronic devices
- Finite element analysis and first-principle calculation

### Research Achievements/Industrial Collaborations

Dr. Jian Wang leads the DEEP (Dynamic Electrochemical Energy Process) group at the School of Energy and Environment, City University of Hong Kong. DEEP targets to clarify the fundamental energy conversion & storage mechanisms and to revolutionize electrochemical energy technologies. DEEP has designed several in-situ experimental setups to operando monitor electrochemical cells across multiple scales and developed several electrode materials/catalysts with performance ranking among the world's best. DEEP has expertise in synchrotron-based characterizations and has established intimate cooperation with many overseas synchrotron institutes, e.g., ALS (USA), UVSOR (Japan), EIltra (Italy), NSRRC (Taiwan).

### Recent Journal Publications

- **J. Wang**, S. Kim, J. Liu, Y. Gao, S. Choi, J. Han, S. Jo, F. Ciucci, H. Kim, Q. Li, W. Yang, X. Long, S. Yang, S. Cho, M. Kim, H. Kim, J. Lim. Redirecting Dynamic Surface Restructuring of a Layered Transition Metal Oxide Catalyst for Superior Water Oxidation. *Nat. Catal.*, 2021, 4, 212–222. (Journal cover, WOS highly-cited paper)
- R. Gao, **J. Wang**, Z-F Huang, R. Zhang, W. Wang, L. Pan, J. Zhang, W. Zhu, X. Zhang, C. Shi, J. Lim, J. Zhou. Pt/Fe<sub>2</sub>O<sub>3</sub> with Pt-Fe pair sites as a catalyst for oxygen reduction with ultralow Pt-loading. *Nat. Energy*, 2021, 6, 614–623.
- **J. Wang**, Y. Gao, H. Kong, J. Kim, S. Choi, F. Ciucci, Y. Hao, S. Yang, Z. Shao, J. Lim. Non-precious Catalysts for Alkaline Water Electrolysis: Operando Characterizations, Theoretic calculations, and Recent Advances. *..*, 2020, 49, 9154-9196.



## Dr. Patrick SIT

Associate Dean (Undergraduate Studies)  
Associate Professor

To Know more:



Email: patrick.h.sit@cityu.edu.hk  
Phone: +(852)-3442-6709



### Biography

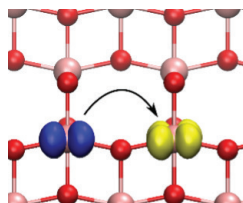
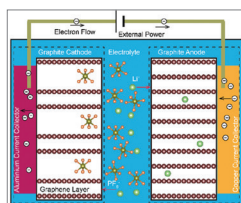
Dr. Patrick Sit is an Associate Professor at the School of Energy and Environment at the City University of Hong Kong. He received his undergraduate degree in Physics from the University of Oxford and Ph.D. in Physics from MIT. Prior to joining the City University of Hong Kong, he was an associate research scholar in the Department of Chemistry at Princeton University and a post-doctoral associate in the Department of Chemistry at the University of Pennsylvania.

### Research Interests

- Atomic-scale computational study and design of catalysts for energy storage and conversion
- Novel materials and processes in rechargeable batteries
- Catalytic waste treatment and valorization
- Redox chemistry in transition metal-containing compounds
- Stability and surface reactions of hybrid inorganic-organic perovskite materials
- Ab initio molecular dynamics study of structural and dynamical properties of liquid systems
- Computational methodology development

### Research Achievements/Industrial Collaborations

- Developed Oxidation-State Constrained Density Functional Theory (OS-CDFT), a novel theoretical approach which allows accurate and efficient study of electron transfer and excitation processes
- Investigated the roles of different components in a novel class of rechargeable batteries called dual-ion batteries
- Studied catalytic oxygen reduction reactions in the novel doped graphene compounds for fuel cell applications
- Studied important reactions for wastewater treatment and waste valorization



### Recent Journal Publications

- W. Zhou and **P. H.-L. Sit** "First-Principles Understanding of the Staging Properties of the Graphite Intercalation Compounds towards Dual-Ion Battery Applications" ACS Omega. 5, 18289–18300 (2020).
- B. Gong, C. Ku, H. Yu, and **P. H.-L. Sit** "Density Functional Theory Investigation into the Effects of Dissolved Organic Matter on H<sub>2</sub>O<sub>2</sub> Activation over -Fe<sub>2</sub>O<sub>3</sub> (001) Surfaces" Journal of Physical Chemistry C. 125, 8508–8517 (2021).
- C. Ku and **P. H.-L. Sit** "Study of Energetics of Polaron Dynamics in Monolayer and Bulk MoS<sub>2</sub> Using Oxidation-State Constrained Density Functional Theory" Journal of Physical Chemistry C. 126, 11246–11253 (2022).

## Professor Angus H. L. YIP

Professor

(Joint appointment with Department of Materials Science and Engineering)

To Know more:



Email: a.yip@cityu.edu.hk

Phone: +(852)-3442-7649



### Biography

Professor Angus Yip joined the School of Energy and Environment and Department of Materials Science and Engineering at City University of Hong Kong as Professor in 2021. He also serves as the Associate Director for Hong Kong Institute for Clean Energy, City University of Hong Kong. Prof. Yip started his academic career as a Professor in the State Key Laboratory of Luminescent Materials and Devices (SKLLMD) and the School of Materials Science and Engineering at South China University of Technology (SCUT), Guangzhou, in 2013. Since 2017, he also served as the Director of the Innovation Center for Printed Organic Photovoltaics in the South China Institute of Collaborative Innovation, Dongguan, which aim is to promote technology transfer and commercialization of new photovoltaic technologies. He got his B.Sc and M.Phil. degrees in Materials Science from the Chinese University of Hong Kong, and completed his Ph.D. degree in MSE in 2008 at the University of Washington, Seattle.

### Research Interests

- Processing-property relationship study of organic and hybrid electronic devices
- Device physics and photophysics of optoelectronic materials and devices
- Emerging light emitting materials and devices
- Printing and patterning techniques of flexible and large-area electronic devices
- Design of new photovoltaic technology for building integration
- Self-powered greenhouse with artificial lighting technology

### Research Achievements/Industrial Collaborations

Prof. Yip's research is in the general area of solution processed optoelectronic materials and devices for energy generation and energy saving. He has published more than 250 papers in top journals including Nature, Science, Nat. Photonics, Nat. Commun. etc, with total number of citations > 30000 and a H-index of 88 (updated to Jan 2022). He has been named eight times consecutively as the "Highly Cited Researchers" during 2014-2021. He was also elected as the member of the Hong Kong Young Academy of Sciences in 2022. He had received over ten national grants, with a total funding scale of over 30 million CNY. In addition to fundamental research, he also dedicated a significant amount of effort to promote translational research, targeting for the commercialization of new generation of solar cell technology.

### Recent Journal Publications

- **Yip et al**, Delocalization of Exciton and Electron Wavefunction in Non-Fullerene Acceptor Molecules Enables Efficient Organic Solar Cells" Nat. Commun. 2020, 11, 3943s
- **Yip et al**, Utilization of Trapped Optical Modes for White Perovskite Light-emitting Diodes with Efficiency Over 12 %" Joule, 2021, 5, 456
- **Yip et al**, The Evolution and Future of Perovskite Based Optoelectronic Devices, Matter. 2021, 4, 3814

## Professor Guohua CHEN

Chair Professor of Smart Energy Conversion and Storage



To Know more:



Email: guohchen@cityu.edu.hk

Phone: +(852)-3442-9020

### Biography

Professor Guohua Chen obtained his B.Eng. from Dalian University of Technology in 1984, M.Eng. and Ph.D. from McGill University respectively in 1989 and 1994. He joined the Hong Kong University of Science and Technology (HKUST) as a Visiting Scholar in 1994, and became as an Assistant Professor in 1997, promoted to Associate Professor in 2002, Full Professor in 2008. He worked as the Head of Department, Chemical and Biomolecular Engineering during 2012 and 2016. He moved to the Department of Mechanical Engineering, the Hong Kong Polytechnic University as Chair Professor of Energy Conversion and Storage in 2017 and served concurrently as an Associate Vice President (Research Support) during 2017-2021.

Prof. Chen has nearly 30 years of working experiences of research and development on energy and environment related projects. He has published over 300 peer reviewed journal papers. His research papers have been well cited by peers with Google Scholar Citation more than 32,000 and H-index 93. He also has three US patents and ten Chinese patents. He is the recipient of inaugural Research Excellence Award, School of Engineering, HKUST; the winner of Merit Award for Individual Research, Faculty of Engineering, PolyU. He is a Fellow of HKIE, AIChE, Global Academy of Chinese Chemical Engineers. He is also elected as a Fellow, Canadian Academy of Engineering. He served as the President, Asian-Pacific Confederation of Chemical Engineering. He is now the Chairman, World Chemical Engineering Council. He is Editor-in-Chief, Process Safety and Environmental Protection; Editor, Separation and Purification Technology; Associate Editor, Canadian Journal of Chemical Engineering; Associate Editor, Chinese Journal of Chemical Engineering.

### Research Interests

- Electrochemical Technology for Wastewater Treatment
- Advanced Electrode Materials for Oxygen/Chlorine Evolution
- Advanced Materials for Lithium/Sodium Ion Batteries
- Surface Functionalization Using Chemical Vapor Deposition of Polymers
- Lithium-Sulfur Batteries for High Performance Energy Storage
- Electrochemical Synthesis of Ammonia

### Research Achievements/Industrial Collaborations

- Invented the method of growing diamond film on the surface of titanium substrate using hot-filament chemical vapor deposition
- Improved the stability and safety of NCM high energy density cathode materials for lithium ion batteries by coating conductive polymers using oxidative chemical vapor deposition method
- Fabricated highly stable dimensionally stable anode materials using IrO<sub>2</sub>-SnO<sub>2</sub>-Sb<sub>2</sub>O<sub>5</sub> with 10% Ir content for oxygen evolution reaction
- Established ApogeeTech Greenery CO Ltd for Li-S batteries development

### Recent Journal Publications

- Wu, JX., Lin, C., Liang, QH., Zhou, GD., Liu, JP., Liang, GM., Wang, M., Li, BH., Hu, L. Ciucci, F., Liu, Q., **Chen, GH** and Yu, XL., Sodium-rich NASICON-structured cathodes for boosting the energy density and lifespan of sodium-free-anode sodium metal batteries, INFOMAT, 2022, Article Number12288, DOI10.1002/inf2.12288.
- Li, J., Qin, XS; Chen, Guanghao; **Chen, GH**, The effect of ruthenium content on the stability and activity of Ti/RuO<sub>2</sub>-Sb<sub>2</sub>O<sub>5</sub>-SnO<sub>2</sub> for oxygen evolution, Journal of the Taiwan Institute of Chemical Engineers, 125(2021)186-194 DOI: 10.1016/j.jtice.2021.06.020
- Xu, G-L; Liu, Q., Lau, K. K.S., Liu, Y.Z., Liu, X., Gao, H., Zhou, X.W., Zhuang, M.H., Ren, Y., Shao, M.H., Ouyang, M.G., Pan, F., Chen, Z.H., Amine, K., and **Chen, G.H.**, Building ultra-conformal protective layers on both secondary and primary particles of layered lithium transition metal oxide cathodes, Nature Energy, 4(2019)484-494, DOI: 10.1038/s41560-019-0387-1.

## Professor Michael K. H. LEUNG

Professor



To Know more:



Email: [mkh.leung@cityu.edu.hk](mailto:mkh.leung@cityu.edu.hk)

Phone: +(852)-3442-4626

### Biography

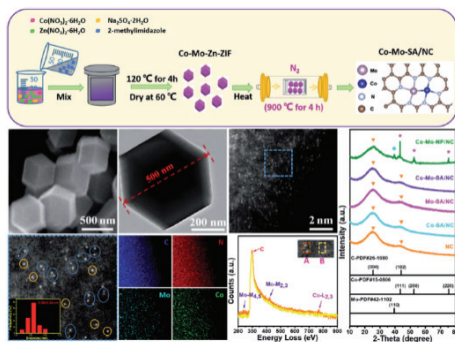
Professor Michael Leung is Shun Hing Education and Charity Fund Professor of Energy and Environment, Professor in the School of Energy and Environment, and also the Director of Ability R&D Energy Research Centre (AERC) at the City University of Hong Kong. His primary research interests include photocatalysis, fuel cell, and advanced refrigeration/air-conditioning. Professor Leung has totally received over HK\$40 million research funding as a PI. He has published over 210 refereed journal papers. He is listed among the top 2% of the world's most highly cited scientists published by Stanford University and a highly cited scholar in energy science and engineering. Prof. Leung is also an International Solar Energy Society (ISES) Board Members at Large Representative (China), a Registered Professional Engineer, Chartered Engineer, Chairman of HKIE Education and Examinations Committee, Past Chairman of the Energy Institute (Hong Kong Branch), and Editor of Applied Energy and Editor-in-Chief of HKIE Transactions.

### Research Interests

- Solar Photocatalysis
- Green Hydrogen and Green Ammonia
- Advanced Refrigeration and Air-Conditioning

### Research Achievements/Industrial Collaborations

- The top 2% of the world's most highly cited scientists according to metrics compiled by Stanford University
- Highly Cited Researchers 2018 by Clarivate Analytics that recognizes world-class researchers selected for their exceptional research performance
- The Most Cited Researchers in Energy Science and Engineering for ShanghaiRanking's Global Ranking of Academic Subjects by Elsevier



### Recent Journal Publications

- Yun He, Keda Chen, **Michael K. H. Leung**, Yizhen Zhang, Li Li, Guisheng Li, Jin Xuan, Jianfen Li, Photocatalytic fuel cell – A review, Chemical Engineering Journal, Volume 42815, January 2022, Article number 131074
- Yizhen Zhang, Jue Hu, Chengxu Zhang, Yizhe Liu, Mengyuan Xu, Yujia Xue, Lifen Liu, **Michael K. H. Leung**, Bimetallic Mo–Co nanoparticles anchored on nitrogen-doped carbon for enhanced electrochemical nitrogen fixation, Journal of Materials Chemistry A, 8(18), 16 April 2020, pp 9091-9098
- Xin Li, Jin Liu, Yizhen Zhang, **Michael K. H. Leung**, Changing charge transfer mode with cobalt-molybdenum bimetallic atomic pairs for enhanced nitrogen fixation, Journal of Materials Chemistry A, 2022, 10, 15595-15604

## Dr. Chunhua LIU

Associate Professor

To Know more:



Email: [chunliu@cityu.edu.hk](mailto:chunliu@cityu.edu.hk)

Phone: +(852)-3442-2885



### Biography

Dr. Chunhua Liu received his B.Eng. and M.Eng. degrees in Automatic Control, Beijing Institute of Technology, China; and Ph.D. in Electrical and Electronic Engineering, The University of Hong Kong, in 2002, 2005 and 2009 respectively. Currently, he serves as an Associate Professor of the School of Energy and Environment, City University of Hong Kong.

Dr. Liu is RGC Research Fellow of Hong Kong, Senior Member of the IEEE, Distinguish Lecturer of IEEE Vehicular Technology Society (VTS), and World's Top 2% Scientists according to metrics compiled by Stanford University. He is Chair & Founder of both Hong Kong Chapter, IEEE Vehicular Technology Society, and Hong Kong-Guangzhou Joint Chapter, IEEE Industrial Electronics Society. In addition, Dr. Liu serves as an Associate Editor of IEEE Transaction on Industrial Electronics, Editor of IEEE Transactions on Vehicular Technology, Editor of IEEE Transactions on Energy Conversion, Editor of Energies, Subject Editor of IET – Renewable Power Generation, and so on. Dr. Liu has published over 150 SCI journal papers and over 60 conference papers, with the Google-Scholar Citation over 8300 by August 2022.

### Research Interests

- Electric motors & drives, electric generators with their design, analysis and control
- Electrified transportation technologies: electric vehicles, electric aircrafts and electric ships
- Power electronics: power converters, wireless power transfer, energy router, etc.
- Electric robotics, electric propulsion systems, renewable energies and microgrids

### Research Achievements/Industrial Collaborations

- Development of electric machines and drives for electric propulsion systems of electrified transportation tools (electric vehicles, electric ships, electric aircrafts) and electric robotics, under the grant supports from RGC (GRF, CRF & RFS), ITC, ECF, NSFC, Shenzhen TIC, etc.
- Development of smart power converters, on-board chargers, V2G chargers, multifunctional converters, wireless chargers, energy routers for industries and companies.
- Development of wired and wireless electric actuators for electric robotics, renewables integrated systems for microgrids, V2G systems, wireless energy routers for potential applications.

### Recent Journal Publications

- **C. Liu**, K.T. Chau, D. Wu, S. Gao, "Opportunities and challenges of vehicle-to-home, vehicle-to-vehicle, and vehicle-to-grid technologies," Proceedings of the IEEE, vol. 101, no. 11, 2409-2427, 2013.
- **C. Liu**, K.T. Chau, C.H.T. Lee, Z. Song, "A Critical Review of Advanced Electric Machines and Control Strategies for Electric Vehicles," Proceedings of the IEEE, vol. 109, no. 6, pp. 1004-1028, 2021.
- Y. Liu, **C. Liu**, X. Gao, S. Liu, "Design and control of a decoupled multichannel wireless power transfer system based on multilevel inverters," IEEE Transactions on Power Electronics, vol. 37, no. 8, pp. 10045-10060, Aug. 2022.

## Dr. Edwin C. Y. TSO

Assistant Professor



To Know more:



Email: [chiytso@cityu.edu.hk](mailto:chiytso@cityu.edu.hk)

Phone: +(852)-3442-4623

### Biography

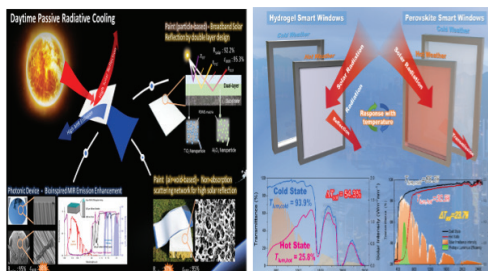
Dr. Edwin Tso received his Bachelor's degree in Mechanical Engineering (1<sup>st</sup> class), M.Phil. degree in Environmental Engineering and Ph.D. degree in Mechanical Engineering from The Hong Kong University of Science and Technology (HKUST) in 2010, 2012 and 2015, respectively. He was awarded the Fulbright – Research Grant Council (RGC) Hong Kong Research Fellowship in 2014, and studied at the University of California, Berkeley (UC Berkeley) in 2015. Upon returning to Hong Kong from UC Berkeley, Dr. Edwin Tso worked as a Research Associate at the Department of Mechanical and Aerospace Engineering, HKUST during 2015 and 2016, before he was promoted to Research Assistant Professor (2016 - 2018). At HKUST, Dr. Tso was also a Junior Fellow at the HKUST Jockey Club Institute for Advanced Study (2016 - 2018). In September 2018, Dr. Tso joined City University of Hong Kong.

### Research Interests

- Thermofluid
- Energy and built environment
- Heat transfer
- Energy efficient building technology

### Research Achievements/Industrial Collaborations

- A daytime passive radiative cooler inspired by the Saharan silver ants has been developed, reducing the consumption of electricity in buildings
- A thermochromic smart window has been fabricated, exhibiting a significant transmittance contrast and a high solar modulation ability, demonstrating its great energy saving potential



### Recent Journal Publications

- S. Liu, Y. Li, Y. Wang, K.M. Yu, B.L. Huang and **C.Y. Tso**, 2022. Near-Infrared-Activated Thermochromic Perovskite Smart Windows, *Advanced Science*, 2106090.
- Y. Zhu, T.C. Ho, H.H. Lee, M.K.H. Leung and **C.Y. Tso**, 2022. Jumping Droplets on Nanostructured Biphilic Surfaces: Effects of Surface, Surface Orientations, and Air Pressure, *Cell Reports Physical Science*, 3 100849.
- K.X. Lin, L.C. Chao, T.C. Ho, C.J. Lin, S.R. Chen, Y.W. Du, B.L. Huang and **C.Y. Tso**, 2021. A Flexible and Scalable Solution for Daytime Passive Radiative Cooling Using Polymer Sheets, *Energy and Buildings* 252 111400.

## Dr. Wei WU

Assistant Professor



To Know more:



Email: [weiwu53@cityu.edu.hk](mailto:weiwu53@cityu.edu.hk)

Phone: +(852)-3442-4436

### Biography

Dr. Wei Wu received his Bachelor's degree from the Department of Building Environment and Energy Engineering at Huazhong University of Science and Technology in 2010. He obtained his Ph.D. degree from the Department of Building Science at Tsinghua University in 2016. He was formerly a visiting scholar of the Center for Environmental Energy Engineering at University of Maryland in 2013. Since 2016, he served as a guest researcher of the Energy and Environment Division at the National Institute of Standards and Technology. He joined the City University of Hong Kong as an Assistant Professor in the School of Energy and Environment in July 2018.

Dr. Wu's research is focused on sustainable building energy technologies, including energy-efficient HVAC technologies, novel thermal heating/cooling, thermochemical energy storage, advanced thermal management, renewable/waste energy utilization, advanced heat pumps, alternative refrigerants, and net-zero energy buildings. He has obtained/filed 18 patents, published a book by Springer Nature, and published around 90 SCI journal papers. He serves as an editorial board member or guest editor of 6 SCI journals. He is among the Top 2% Scientists Worldwide by Stanford University. He is an expert of IEA-HPT and IEA-SHC Annex.

### Research Interests

- Energy-efficient HVAC technologies; Thermal heating/cooling technologies
- High-density thermal energy storage; Advanced thermal management
- Advanced heat pump technologies; Natural and low-GWP refrigerants
- Net-zero energy buildings (NZEBs); Building energy efficiency

### Research Achievements/Industrial Collaborations

- Willis H. Carrier Young Researcher Awards, International Institute of Refrigeration
- Distinguished Associate Award, National Institute of Standards and Technology (NIST)
- Excellent Young Scholar Award of Energy and Built Environment
- Development of novel thermal heating/cooling, CO<sub>2</sub> heat pump, microchannel membrane cooling, thermochemical thermal battery, and energy-free thermal management for PV/battery/electronics
- Various industrial collaborations on HVAC technologies for buildings, new-energy vehicles, data centers, and energy storage plants (collaborations with Towngas, CLP, BYD, Goaland, etc.)

### Recent Journal Publications

- Z Ding, **W Wu**, M Leung. On the rational development of advanced thermochemical thermal batteries for short-term and long-term energy storage. *Renewable and Sustainable Energy Reviews*, 2022, 164: 112557.
- Y Sui, C Zhai, **W Wu**, M Leung. Multi-scale Computer-aided molecular design of Ionic liquid for absorption heat transformer based on Machine learning. *Energy Conversion and Management*, 2022, 261: 115617.
- F Li, **W Wu**. Coupled electrical-thermal performance estimation of photovoltaic devices: A transient multiphysics framework with robust parameter extraction and 3-D thermal analysis. *Applied Energy*, 2022, 319: 119249.

## Dr. Denis Y. W. YU

Associate Professor



To Know more:



Email: [denisyu@cityu.edu.hk](mailto:denisyu@cityu.edu.hk)

Phone: +(852) 3442-6885

### Biography

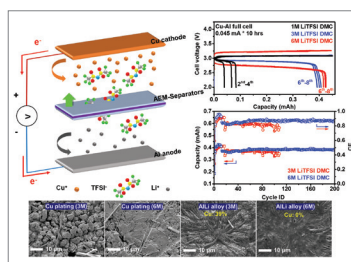
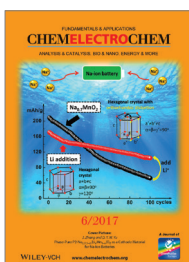
Dr. Denis Yu received his A.B. (Physics) in 1995 from Princeton University and Ph.D. in 2003 (Applied Physics) from Harvard University. After completing his Ph.D., he moved to Japan to work as an engineer at the Energy R&D Laboratory at SANYO Electric Co. Ltd., developing cathode and anode materials for Li-ion batteries. In mid 2011, he joined the Energy Research Institute at Nanyang Technological University, Singapore, leading the battery and energy storage effort, as well as serving as a co-PI at the TUM CREATE Centre for Electromobility. He joined the City University of Hong Kong in 2013 and was promoted to Associate Professor in 2018.

### Research Interests

- Lithium-ion battery materials and characterizations
- Mechanical properties of battery electrodes
- Anionic reactions in sodium-ion cathodes
- Dual-ion batteries and anion intercalation
- Technologies on electrolyte and membranes
- Metal-metal batteries
- Battery safety and surface chemistry characterizations

### Research Achievements/Industrial Collaborations

- High capacity Si anode for Li-ion batteries – stable capacity up to 2500 mAh/g with Si cluster
- Novel fast charging Sb anode for Li-ion batteries – polymer coating to suppress volume expansion; 10-mins charge-discharge cycles
- High-voltage high-power battery cathode based on  $\text{PF}_6^-$  intercalation into graphite – excellent capacity up to 10C rate
- 3-V metal-metal batteries with low cost stainless steel/lithium and copper/lithium
- 2 industrial collaborations on green energy storage (carbon and silicon)
  - Evaluate materials for energy storage applications
  - Optimize performance and feedback to collaborators
  - Provide expert advices on research directions and market trends



### Recent Journal Publications

- H. Wang, **D. Y. W. Yu**, ACS Appl. Energy Mater. (2019) 2, 4936-4942.
- P.-K. Lee, M. H. Tahmasebi, T. Tan, S. Ran, S. T. Boles, **D. Y. W. Yu**, Materials Today Energy (2019) 12, 297-302.
- S. Wang, X. Yang, P.-K. Lee, A. L. Rogach, **D. Y. W. Yu**, Chem. Mater. (2019) 31, 2469-2475.



## Professor Chak K. CHAN

Chair Professor of Atmospheric Environment



To Know more:



Email: [chak.k.chan@cityu.edu.hk](mailto:chak.k.chan@cityu.edu.hk)

Phone: +(852)-3442-5593

### Biography

Professor Chak K. Chan obtained B.Sc in Chemical Engineering from the University of Texas at Austin in 1986 and Ph.D. in Chemical Engineering from the California Institute of Technology in 1992. He is currently Dean and Chair Professor in School of Energy and Environment at City University of Hong Kong. He joined the Hong Kong University of Science and Technology (HKUST) as Assistant Professor in 1992 and rose to the rank of Professor in 2006. In 2010, he was appointed Founding Head of Division of Environment. He joined City University of Hong Kong in 2015.

Prof. Chan has over 30 years of research experience in air pollution and aerosol science. He specializes in aerosol water uptake and phase transformation, gas-aerosol interactions and the formation of secondary aerosols in the atmosphere, and laser spectroscopy of aerosols. He was Science Advisor to Secretary of Environment, during his sabbatical at the HKSAR Environment Bureau in 2014. He was Editor-in-Chief in Atmospheric Environment during 2008–2019. He has published over 210 papers with total SCOPUS citations of over 12,000 to date.

### Research Interests

- Aerosol Chemistry: aerosol hygroscopic growth and phase transformation, formation of secondary pollutants, gas-particle interactions and equilibria, heterogeneous reactions
- Air Pollution: source identification, PM<sub>2.5</sub>, aerosol size distribution, vehicular and cooking emissions
- Micro-droplet laser spectroscopy

### Research Achievements/Industrial Collaborations

- Haagen Smit Award of Atmospheric Environment in 2015
- Second Prize of the State Natural Science Award in 2010
- First Prize of the Natural Science Award in 2007
- First winner of the Asian Young Aerosol Scientists Award in 2004

### Recent Journal Publications

- Gen M., Zhang R., Huang D.D., Li Y., **Chan C.K.** (2019) Heterogeneous SO<sub>2</sub> oxidation in sulfate formation by photolysis of particulate nitrate. *Environmental Science & Technology Letters*. <https://pubs.acs.org/doi/10.1021/acs.estlett.8b00681>
- Liu T., Wang Z., Wang X.M., and **Chan C.K.** (2018) Primary and secondary organic aerosol from heated cooking oil emissions. *Atmospheric Chemistry and Physics*. <https://doi.org/10.5194/acp-18-11363-2018>.
- Huang D.D., Zhang Q., Cheung H.H.Y., Yu L., Zhou S., Collier S., Anastasio C., Smith J.D., **Chan C.K.** (2018). Formation and evolution of aqSOA from direct photolysis of phenolic carbonyls: comparison between ammonium sulfate and ammonium nitrate solutions. *Environmental Science and Technology*. DOI: 10.1021/acs.est.8b03441.

## Professor Johnny C. L. CHAN

Emeritus Professor



To Know more:



Email: johnny.chan@cityu.edu.hk

Phone: +(852)-3442-7820

### Biography

Professor Johnny Chan is currently an Emeritus Professor at City University of Hong Kong. Before his retirement in June 2021, he was Chair Professor of Atmospheric Science and Director of the Guy Carpenter Asia-Pacific Climate Impact Centre. He was also the Founding Dean of the School of Energy and Environment of City University of Hong Kong, serving from the founding of the School in July 2009 to July 2015. Between 2002 and 2008, he was also the Director of the Shanghai Typhoon Institute of the China Meteorological Administration.

Prof. Chan is internationally renowned in the research areas of typhoons and monsoons. In the last few decades, he has been working on the problem of global warming and its relationship with tropical cyclone and monsoon climate, as well as the impact of urbanisation on local and regional climate. He has published close to 270 international journal articles and given over 300 invited talks and conference papers. According to the Essential Science Indicators, he ranks the top in the world in the number of SCI-listed journal articles related to tropical cyclones, and is the ninth most-cited author in this field during the 1996-2006 period.

Prof. Chan was a member of the Tropical Meteorology Research Working Group of the World Meteorological Organization and the Chair of its Tropical Cyclone Panel between 2012 and 2018. He is also an associate editor of three journals: International Journal of Climatology, Atmospheric and Oceanic Science Letters and Acta Meteorologica Sinica, and a member of the Editorial Board of World Scientific Series on Earth System Science in Asia. In Hong Kong, he is a member of the Science Advisory Committee of the Hong Kong Observatory, and an advisor of the GreenPlus Programme and was a member of the Advisory Group on Advanced Metering Infrastructure, both of China Light & Power Company Limited.

Prof. Chan's honours include Honorary Fellow of the UK Energy Institute, Fellow of the American Meteorological Society, recipient of the International Journal of Climatology Award of the Royal Meteorological Society, Distinguished Meteorologist awarded by the Hong Kong Observatory, and a Senior Research Fellowship awarded by the Croucher Foundation.

### Research Interests

- Tropical cyclone dynamics, modelling and climate
- Urbanisation and climate change
- Climate risk and resilience
- Tidal energy conversion in low-flow environments

### Research Achievements/Industrial Collaborations

- Honorary Fellow, Energy Institute, UK
- International Journal of Climatology Prize, awarded by the Royal Meteorological Society, UK
- Fellow, American Meteorological Society
- Senior Research Fellowship awarded by the Croucher Foundation

### Recent Journal Publications

- Chan, K. T. F., K. Zhang, Y. Wu and **J. C. L. Chan**, 2022: Landfalling hurricane track modes and decay. Nature 606, E7–E11 DOI: 10.1038/s41586-022-04791-1
- Chand, S. S., K. J. E. Walsh, S. J. Camargo, J. Kossin, K. J. Tory, M. F. Wehner, **J. C. L. Chan**, P. J. Klotzbach, A. J. Dowdy, S. S. Bell, H. A. Ramsay and H. Murakami, 2022: Declining tropical cyclone frequency under global warming. Nature Climate Change DOI: 10.1038/s41558-022-01388-4
- Tu, S., J. Xu, **J. C. L. Chan**, K. Huang, F. Xu, and L. Chiu, 2021: Recent global decrease in the inner-core rain rate of tropical cyclones. Nature Communications DOI:10.1038/s41467-021-22304-y

## Dr. Jung-Eun CHU

Assistant Professor



To Know more:



Email: [jungeun.chu@cityu.edu.hk](mailto:jungeun.chu@cityu.edu.hk)

Phone: +(852)-3442-9764

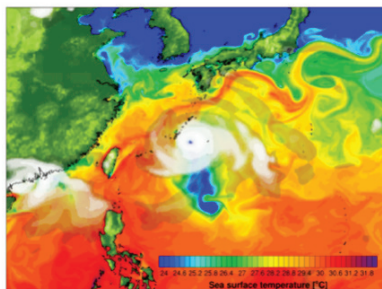
### Biography

Dr. Jung-Eun Chu is an atmospheric and climate scientist. Her research topics include extreme weather events such as tropical cyclones and tornadoes, high-resolution earth system modelling, monsoon dynamics, and atmospheric aerosols. She is particularly interested in advancing the scientific understanding of the impact of climate change, as well as employing cutting-edge methodologies to better translate state-of-the-art science for climate change adaptation.

She obtained her Ph.D. in Atmospheric Sciences at Pusan National University in South Korea. During the Ph.D., she has gained extensive experiences in the field of atmospheric and climate science through her studies on monsoon dynamics, aerosol light absorption, climate modeling, and machine learning. From 2017 to 2022, she worked at the IBS Center for Climate Physics (ICCP) led by Dr. Axel Timmermann and studied extreme weather events including U.S. tornado activities and tropical cyclones. Dr. Chu joined the City University of Hong Kong as Assistant Professor in the School of Energy and Environment in August 2022.

### Research Interests

- Climate change impact on tropical cyclones
- High-resolution Earth system modelling
- Extreme weather events
- Monsoon dynamics
- Atmospheric aerosols
- Machine learning and climate



### Research Achievements/Industrial Collaborations

- Top 100<sup>th</sup> excellence research from Ministry of Science and ICT in the field of Energy and Environment
- National Junior Research Fellowship for "Core Leaders of the Future Basic Science Program" (2013-2016, ~60,000 USD/year)

### Recent Journal Publications

- Sun-Seon Lee, **Jung-Eun Chu**, Axel Timmermann, Eui-Seok Chung, June-Yi Lee, 2021: East Asian climate response to COVID-19 lockdown measures in China, *Scientific Reports*, 11, 16852, doi: 10.1038/s41598-021-96007-1
- **Jung-Eun Chu**, Sun-Seon Lee, Axel Timmermann, Christian Wengel, Malte F. Stuecker, Ryohei Yamaguchi, 2020: Reduced tropical cyclone densities and ocean effects due to anthropogenic greenhouse warming, *Science Advances*, 6(51), eabd5109, doi: 10.1126/sciadv.abd5109
- **Jung-Eun Chu**, Axel Timmermann, and June-Yi Lee, 2019: North American April tornado occurrences linked to global sea surface temperature anomalies, *Science Advances*, 5(8), eaaw9950, doi: 10.1126/sciadv.aaw9950.

## Dr. Jin-Soo KIM

Assistant Professor



To Know more:



Email: Jinsoo.Kim@cityu.edu.hk

Phone: +(852)-3442-7981

### Biography

Dr. Jin-Soo Kim obtained Bachelor (2010) and Master (2013) degrees both in Seoul National University in South Korea. He worked for three years as a researcher in the Korea Institute of Ocean Science and Technology and Pohang University of Science and Technology for alternative service in an agency appointed by the Korean administration for Military Manpower Administration. He received his Ph.D. in Climate Dynamics from the Pohang University of Science and Technology in 2019 with the Best Thesis Award in the field of Natural Science. His doctoral dissertation was focused on two-way interactions between terrestrial ecosystem and climate system including El Niño-Southern Oscillation-related carbon cycle, Arctic warming-related frost damage, and physiological forcing on Arctic amplification. Before joining the School of Energy and Environment, he worked on fire dynamics as a Postdoctoral Researcher at the University of Edinburgh and Senior Researcher at the University of Zurich. Dr. Kim's research is focusing on Climate System science, Earth System modelling, Terrestrial carbon cycle, Carbon-Climate feedback, and Fire dynamics.

### Research Interests

- Climate variability and relevant ecosystem productivity response
- Climate risk on carbon neutrality, agricultural productivity, and wildfire
- Carbon uptake evolution in Hong Kong and East Asia under greenhouse gas warming scenarios
- Developing parameterization for fire dynamics
- Methane emission from wetland and its future projection

### Research Achievements/Industrial Collaborations

- Sensitivity analysis for terrestrial ecosystem productivity estimation to climate factors
- Arctic warming-induced cold winter teleconnection and cold damage quantification on the crop yield
- Development of fire risk seasonal forecasting model for Indonesia

### Recent Journal Publications

- **Kim, J.-S.**, J.-S. Kug, S.-J. Jeong, J.-H. Yoon, N. Zeng, J. Hong, J.-H. Jeong, Y. Zhao, X. Chen, K. Ichii, M. Williams & G. Schaepman-Strub (2022), Arctic warming-induced cold damage to East Asian terrestrial ecosystems, *Communications Earth & Environment*, 3, 16
- **Kim, J.-S.**, J.-S. Kug, S.-J. Jeong, H. Park & G. Schaepman-Strub (2020), Extensive fires in southeastern Siberian permafrost linked to preceding Arctic Oscillation, *Science Advances*, 6(2), eaax3308
- **Kim, J.-S.**, J.-S. Kug & S.-J. Jeong, (2017), Intensification of terrestrial carbon cycle related to El Niño–Southern Oscillation under greenhouse warming, *Nature Communications*, 8, 1674

## Dr. Theodora NAH

Assistant Professor

To Know more:



Email: [theodora.nah@cityu.edu.hk](mailto:theodora.nah@cityu.edu.hk)

Phone: +(852)-3442- 5578



### Biography

Dr. Theodora Nah received her Hon. B.Sc. in Chemistry and Mathematics from the University of Toronto, and her Ph.D. in Chemistry from the University of California, Berkeley. Prior to joining City University of Hong Kong, she was a postdoctoral fellow at Georgia Institute of Technology, where she worked on the U.S. EPA funded project focused on understanding the effects of ammonia on air quality and climate. Her research program at City University of Hong Kong uses a combination of laboratory, field, and modelling studies to study the air and water pollutants in coastal cities.

### Research Interests

- Environmental chemistry
- Aerosol chemistry
- Air and water pollution
- University-industry-government collaboration
- Organic pollutant lifecycles
- Biogeochemical cycles

### Research Achievements/Industrial Collaborations

- Source contributions to and effects of aerosol acidity on the composition of acidic aerosols funded through 2019 UGC Early Career Scheme  
Principal Investigator: Dr. Theodora Nah (SEE)
- Invited participant (only 25 selected biennially) in the Atmospheric Chemistry Colloquium for Emerging Senior Scientists (ACCESS) XIII

### Recent Journal Publications

- **Nah, T.**; Xu, L.; Osborne-Benthaus K.A.; White, S. M.; Francis, S.; Ng, N.L., Mixing Order of Sulfate Aerosols and Isoprene Epoxydiols Affects Secondary Organic Aerosol Formation in Chamber Experiments, *Atmospheric Environment*, 217, 1-11, 2019.
- **Nah, T.**; Ji, Y.; Tanner, D.J.; Guo, H.; Sullivan, A.P.; Ng, N.L.; Weber, R.J.; Huey, L.G., Real-time Measurements of Gas-phase Organic Acids using SF<sub>6</sub>- Chemical Ionization Mass Spectrometry, *Atmospheric Measurement Techniques*, 11, 5087-5104, 2018.
- **Nah, T.**; Guo, H.; Sullivan, A.P.; Chen, Y.; Tanner, D.J.; Nenes, A.; Russell, A.; Ng, N.L.; Huey, L.G.; Weber, R.J., Characterization of Aerosol Composition, Aerosol Acidity, and Organic Acid Partitioning at an Agriculturally Intensive Rural Southeastern US Site, *Atmospheric Chemistry and Physics*, 18, 11471-11491, 2018.
- Boyd, C.M.; **Nah, T.**; Xu, L.; Berkemeier, T.; Ng, N.L., Secondary Organic Aerosol (SOA) from Nitrate Radical Oxidation of Monoterpenes: Effects of Temperature, Dilution, and Humidity on Aerosol Formation, Mixing, and Evaporation, *Environmental Science & Technology*, 51, 7831-7841, 2017.

## Dr. Jin SHANG

Associate Professor

To Know more:



Email: jinshang@cityu.edu.hk

Phone: +(852)-3442-7714



### Biography

Dr. Jin Shang obtained his Bachelor's (2007) and Master's (2009) degrees both in Environmental Engineering at Northeastern University in China and Ph.D. (2013) in Chemical Engineering at the University of Melbourne. His Ph.D. thesis on carbon dioxide captured from flue gas and natural gas streams discovered a new gas separation mechanism, i.e., molecular trapdoor mechanism, which has been recognized as the 4th mechanism for adsorptive gas separation. After his Ph.D., he worked as a research fellow on an Australian Research Council Discovery Project focusing on developing advanced gas adsorbents at the University of Melbourne. Since 2015, as Co-chief Investigator of Australian Research Council Training Centre for Liquefied Natural Gas Futures, he has been actively participated in research along with major industry partners in oil and gas field. He then moved to Georgia Institute of Technology and worked as a postdoctoral fellow funded by ExxonMobil focusing on restricted gas diffusion in zeolites by advanced molecular simulation, prior to joining the City University of Hong Kong as Assistant Professor in the School of Energy and Environment in 2016.

Dr. Shang specializes in molecular adsorption, separation, and storage using porous materials such as zeolites and metal-organic frameworks. His research is focused on understanding the fundamental physical chemistry of molecular adsorption process via combined experimental and computational methods, in order to engineer designer adsorbents and advance the adsorption science underpinning separation, catalysis, sensing, and storage. His research is aimed at solving problems in the environment and energy field, including carbon capture and utilization, methane purification from natural gas/biogas/landfill gas, nitrogen oxides removal and abatement, volatile organic compounds removal, energy gas storage, etc. As of September 2022, Dr. Shang has published over 95 papers in journals such as Nature Communications, Journal of the American Chemical Society, Angewandte Chemie, Chemical Science, Advanced Science, Advanced Materials, Advanced Functional Materials, ACS Nano, Nano Letters, Chemical Communications, Chemical Engineering Journal, Environmental Science & Technology, Green Chemistry, etc.

### Research Interests

- CO<sub>2</sub> capture
- Natural gas/biogas/landfill gas purification
- Low temperature NO<sub>x</sub> removal
- VOCs (volatile organic compounds) removal
- NH<sub>3</sub> removal
- Paraffin/olefin separation
- Gas storage
- Chemical sensing

### Research Achievements/Industrial Collaborations

- Young Researcher Award by AIChE and Association of Pacific Rim Universities (APRU) 2020
- Finalist of UNSW Energy Future Collaborative Innovation Award 2014, Australia
- The Chancellor's Prize for Excellence in the Ph.D. Thesis, The University of Melbourne, Australia, in 2013
- Collaboration with Chevron in developing zeolite molecular sieves as adsorbents for industrial gas separations
- Filing eight patents in the areas of energy and environment

### Recent Journal Publications

- Wang, T., Tian, B., Han, B., Ma, D., Sun, M., Hanif, A., Xia, D. and **Shang, J.** "Recent advances on porous materials for synergetic adsorption and photocatalysis", Energy & Environmental Materials 2021, 0, 1.
- Shang, S., Yang, C., Wang, C., Qin, J., Li, Y., Gu, Q., **Shang, J.** "Transition-Metal-Containing Porphyrin Metal-Organic Frameworks as  $\pi$ -Backbonding Adsorbents for NO<sub>2</sub> Removal", Angewandte Chemie International Edition 2020, 59 (44), 19680.
- **Shang, J.**, Hanif, A., Li, G., Xiao, G., Liu, J. Z., Xiao, P., Webley, P.A. "Separation of CO<sub>2</sub> and CH<sub>4</sub> by Pressure Swing Adsorption Using a Molecular Trapdoor Chabazite Adsorbent for Natural Gas Purification", Industrial & Engineering Chemistry Research 2020, 59 (16), 7857.

## Dr. Xuan WANG

Assistant Professor



To Know more:



Email: xuanwang@cityu.edu.hk

Phone: +(852)-3442-0688

### Biography

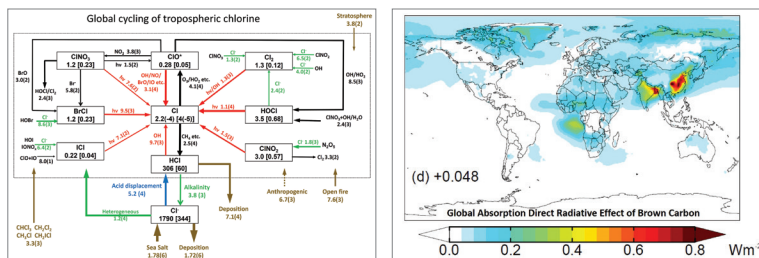
Dr. Xuan Wang received his B.Eng. (Environmental Engineering) in 2009 from Nankai University and M.Sc. (Environmental Science and Engineering) in 2012 from Tsinghua University. He obtained his Ph.D. (Environmental Chemistry) from Massachusetts Institute of Technology in 2017. After completing his Ph.D., he worked as a postdoctoral researcher at Harvard University. He joined the City University of Hong Kong in 2019.

### Research Interests

- Atmospheric chemistry and physics
- Mathematical modelling for Environmental and Earth Science
- Aerosol effects on global and regional climate
- Strategies for Mitigating Air Pollution

### Research Achievements/Industrial Collaborations

- Chlorine chemistry mechanism for atmospheric chemical transport models
- Carbonaceous aerosols model scheme for climate models
- Estimation of direct warming effect of atmospheric soot, which is highlighted by Nature as important scientific evidence for climate policy making



### Recent Journal Publications

- Zhai, S., Jacob, D. J., **Wang, X.**, Shen, L., Li, K., Zhang, Y., Gui, K., Zhao, T., and Liao, H.: Fine particulate matter (PM<sub>2.5</sub>) trends in China, 2013–2018: separating contributions from anthropogenic emissions and meteorology, *Atmos. Chem. Phys.* (2019) 19, 11031–11041.
- **Wang, X.**, Jacob, D. J., Eastham, S. D., Sulprizio, M. P., Zhu, L., Chen, Q., Alexander, B., Sherwen, T., Evans, M. J., Lee, B. H., Haskins, J. D., Lopez-Hilfiker, F. D., Thornton, J. A., Huey, G. L., and Liao, H.: The role of chlorine in global tropospheric chemistry, *Atmos. Chem. Phys.* (2019) 19, 3981–4003.
- **Wang, X.**, Heald, C. L., Liu, J., Weber, R. J., Campuzano-Jost, P., Jimenez, J. L., Schwarz, J. P., and Perring, A. E.: Exploring the observational constraints on the simulation of brown carbon, *Atmos. Chem. Phys.* (2018) 18, 635–653.

## Dr. Alicia K. J. AN

Associate Professor



To Know more:



Email: [alicia.kjan@cityu.edu.hk](mailto:alicia.kjan@cityu.edu.hk)

Phone: +(852)-3442-9626

### Biography

Dr. Alicia An received her Ph.D. in Civil and Environmental Engineering from the Hong Kong University of Science and Technology (HKUST). Her dissertation on sludge minimization mechanism in Oxidic-Settling-Anaerobic membrane process in wastewater treatment system was well received and cited. Since 2009, Dr. An has extended her research and education career to include Sustainability concepts at the University of Tokyo (UT), Japan. Dr. Alicia An joined the City University of Hong Kong in August 2014 and her research emphasizes the development of emerging membrane technologies and innovative approaches to solve pressing water quality and quantity issues.

### Research Interests

- Seawater desalination using membrane technology: Reverse osmosis (RO), membrane distillation (MD), forward osmosis (FO), and hybrid process
- Emerging technologies such as MD, FO, and Crystallizer for wastewater treatment and resource recovery
- Membrane fabrication and characterization
- Membrane-based technologies for removing emerging pollutants

### Research Achievements/Industrial Collaborations

Dr. An is the PI of several competitive external grants such as GRF, ITF, TRS and Contract Research, as well as internal grant such as the ARG. In addition, within City University of Hong Kong, Dr. An is working with Department of Infectious Diseases and Public Health as a Co-I in a grant from the International Development Research Center of Canada. Recently, Dr. An (in Co-PI capacity) was a recipient under the Theme-based Research Scheme 2019/20 (TRS) Funding for Developing a Sustainable Environment. Her research has led to more than 40 papers in top-tier journals. Through her consultancy work, she is collaborating with the Drainage Services Department (DSD) and Water Supplies Department (WSD) of the HKSAR; international consulting firms (Black & Vetch, Mott MacDonald); Hong Kong based industries (L Industries, Prime World Limited) and China Everbright International Limited.

### Recent Journal Publications

- **An, A. K.;** Guo, J.a; Lee, E.-J.c; Jeong, S.; Zhao, Y.; Wang, Z.; Leiknes, T. PDMS/PVDF hybrid electrospun membrane with superhydrophobic property and drop impact dynamics for dyeing wastewater treatment using membrane distillation. *J. Membr. Sci.* 2017, 525, 57–67.
- Lee, E.-J.c; Deka, B. J.a; Guo, J.a; Woo, Y. C.; Shon, H. K.; **An, A. K.** Engineering the Re-Entrant Hierarchy and Surface Energy of PDMS-PVDF Membrane for Membrane Distillation Using a Facile and Benign Microsphere Coating. *Environ. Sci. Technol.* 2017, 51 (17), 10117–10126.
- **An, A. K.;** Guo, J.a; Jeong, S.; Lee, E. J.c; Tabatabai, S. A. A.; Leiknes, T. O. High flux and antifouling properties of negatively charged membrane for dyeing wastewater treatment by membrane distillation. *Water Res.* 2016, 103, 362–371.
- Lee, E.-J.c; **An, A. K.;** He, T.; Woo, Y. C.; Shon, H. K. Electrospun nanofiber membranes incorporating fluorosilane-coated TiO<sub>2</sub> nanocomposite for direct contact membrane distillation. *J. Membr. Sci.* 2016, 520, 145–154.



## Dr. Henry Y. HE

Assistant Professor



To Know more:



Email: [henryhe@cityu.edu.hk](mailto:henryhe@cityu.edu.hk)

Phone: +(852)-3442-4370

### Biography

Dr. Yuhe He obtained his Bachelor degree in Applied Biology and M.Phil. degree in Environmental Science at City University of Hong Kong. He moved to Canada and obtained his Ph.D. degree under supervision of Professor John Giesy at University of Saskatchewan. His work focused on toxicological assessment on Oil Sands Process-affected Water (OSPW). After that, he worked with Professor Greg Goss at University of Alberta on several aquatic contaminant assessment projects, including hydraulic fracturing flowback and produced water (HF-FPW), nanomaterial and nanopesticide, brominated flame retardants, and other emerging contaminants, using a variety of aquatic invertebrate and fish models. He joined City University of Hong Kong in 2019, and his current research focuses on the environmental fate and impact of emerging organic pollutants in marine ecosystems.

### Research Interests

- Aquatic ecotoxicology
- Emerging organic contaminants
- Molecular and cellular toxicology
- Small fish models

### Research Achievements/Industrial Collaborations

- Informing best practices for hydraulic fracturing in Alberta: Water sources and characterizing the toxicity of produced fracturing fluid – project funded by National Sciences and Engineering Research Council (NSERC) and Encana Corporation
- Assessing the environmental safety and potential ecotoxicological effects of municipal wastewater effluent treated by Advanced Oxidation System - project funded by National Sciences and Engineering Research Council (NSERC) and BioLargo Inc

### Recent Journal Publications

- **He Y**, Sun C, Zhang Y, Folkerts EJ, Martin JW, Goss GG. Developmental Toxicity of the Organic Fraction from Hydraulic Fracturing Flowback and Produced Waters to Early Life Stages of Zebrafish (*Danio rerio*). *Environmental Science & Technology*. 2018, 52(6): 3820-3830. Journal front cover.
- **He Y**, Zhang Y, Martin JW, Alessi DS, Giesy JP, Goss GG. 2018. In vitro assessment of endocrine disrupting potential of organic fractions extracted from hydraulic fracturing flowback and produced water (HF-FPW). *Environmental International*. 2018, 121(Pt1), 824-831.
- **He Y**, Flynn SL, Folkerts EJ, Zhang Y, Ruan D, Alessi DS, Martin JW, Goss GG. Chemical and toxicological characterizations of hydraulic fracturing flowback and produced water. *Water Research*. 2017, 14, 78-87.



## Dr. Jason C. H. LAM

Assistant Professor



To Know more:



Email: [jason.lam@cityu.edu.hk](mailto:jason.lam@cityu.edu.hk)

Phone: +(852)-3442-7451

### Biography

With interests in combatting climate change and environmental pollution, Dr. Jason Lam's research aims to mitigate global dependence on fossil resources by promoting the production of sustainable energy and chemicals.

As a Postdoctoral Fellow at Yale University, he developed a protocol to convert crude glycerol, a biodiesel refinery waste product, into lactic acid, a building block for biodegradable plastics. For his doctoral work at Michigan State University, Dr. Lam examined electrochemical strategies to convert biomass into liquid fuels.

Outside of lab work, Dr. Lam is an educator and an environment enthusiast. He has mentored numerous undergraduate researchers at MSU and Yale, as well as high school students in the MSU High School Honours Science Program (HSHSP). Dr. Lam has also been invited to design and teach an online certificate program on the practice of green chemistry to a diverse body of professional students in the University of Washington's Continuing Education Programs. Dr. Lam recently taught at Wesleyan University for a year before joining the School of Energy and Environment of City University of Hong Kong in 2019.

### Research Interests

- Industrial waste and biomass valorization
- Electrocatalysis for organic transformation
- Green chemistry
- Catalyst design and synthesis
- Sustainable and renewable energy storage

### Research Achievements/Industrial Collaborations

- Collaborated and developed an electrocatalytic upgrading strategy to improve the energy content and chemical stability of biomass fast-pyrolysis oil (Bio-oil)
- Developed a mild electrochemical method to convert biodiesel crude glycerol waste into lactic acid
- Published several top-tier peer-reviewed journals and obtained 2 patents

### Recent Journal Publications

- **Lam, C. H.**; Bloomfield A. J.; Anastas, P. T. "Switchable Production of Valuable Feedstocks from Glycerol via Electrocatalytic Oxidation with Earth Abundant Metal Water Oxidation Catalyst" *Green Chem.*, 2017, 19, 1958-1968.
- Escande, V. E.; **Lam, C. H.**; Coish, P.; Anastas, P. T. "Heterogeneous Sodium-Manganese Oxide Catalyzed Aerobic Oxidative Cleavage of 1,2-diols" *Angew. Chem. Int. Ed.* 2017, 56, 9561 – 9565. (Featured as Hot Paper)
- **Lam, C. H.**; Lowe, C.; Li, Z.; Longe, K.; Rayburn, J.; Caldwell, M.; Houdek, C.; Maguire J.; Saffron, C. M.; Miller, D. J.; Jackson, J. E. "Electrocatalytic Upgrading of Model Lignin Monomers with Earth Abundant Metal Electrodes" *Green Chem.*, 2015, 17, 601-609.

## Dr. Patrick K. H. LEE

Associate Professor



To Know more:



Email: [patrick.kh.lee@cityu.edu.hk](mailto:patrick.kh.lee@cityu.edu.hk)

Phone: +(852)-3442-4625

### Biography

Dr. Patrick Lee is interested in solving biologically-related energy and environmental problems. His academic background is in biochemical engineering, environmental engineering and microbiology. He often works at the interface of fundamental and applied sciences. While Dr. Lee is interested in understanding microbiology at the molecular and cellular levels, it is also his goal to apply the fundamental findings in engineering applications to solve real-world problems. His research involves using experimental and computational systems biology approaches to study complex microbial communities or microbiome. Dr. Lee also applies molecular and engineering techniques to engineer model and non-model bacteria to produce value-added products.

### Research Interests

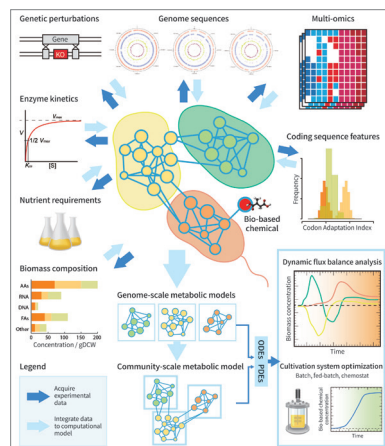
- Biotechnology and microbiology
- Environmental microbiome
- Production of value-added products

### Research Achievements/Industrial Collaborations

- Special Recognition Award, World Cultural Council (WCC), 2018
- Achievement Award, Bioenergy Society of Singapore, 2018
- Outstanding Supervisor Award, City University of Hong Kong, 2018
- The President's Awards, City University of Hong Kong, 2016
- Natural Sciences and Engineering Research Council Post-doctoral Fellowship, Canada, 2009

### Recent Journal Publications

- Villada, J. C., M. F. Duran, and **P. K. H. Lee**. 2019. Genomic evidence for simultaneous optimization of transcription and translation through codon variants in the *pmoCAB* operon of type Ia methanotrophs. *mSystems*. 4: e00342-19.
- Lu, H., J. C. Villada, and **P. K. H. Lee**. 2019. Modular metabolic engineering for biobased chemical production. *Trends Biotechnol.* 37: 152-166.
- Leung, M. H. Y., X. Tong, D. Wilkins, H. H. L. Cheung, and **P. K. H. Lee**. 2018. Individual and household attributes influence the dynamics of the personal skin microbiota and its association network. *Microbiome*. 6: 26.



## Dr. Carol S. K. LIN

Associate Professor



To Know more:



Email: [carollin@cityu.edu.hk](mailto:carollin@cityu.edu.hk)

Phone: +(852)-3442-7497

Webpage: [http://www.cityu.edu.hk/see/personal/Carol\\_Lin.htm](http://www.cityu.edu.hk/see/personal/Carol_Lin.htm)

### Biography

Dr. Carol Lin received her Bachelor's degree in Chemical and Materials Engineering with 1<sup>st</sup> class honours from the University of Auckland, New Zealand. She was awarded with Ph.D. in 2008 in the research field of Biochemical Engineering at the School of Chemical Engineering and Analytical Science at the University of Manchester, England. After one year as a postdoctoral researcher in the research group of Professor Wim Soetaert at the Centre of Expertise – Industrial Biotechnology and Biocatalysis at the Ghent University in Belgium, she returned to Hong Kong and joined the Department of Chemical and Biomolecular Engineering at the Hong Kong University of Science and Technology as a Visiting Assistant Professor. In 2011, she began her academic career in School of Energy and Environment at City University of Hong Kong, and she was promoted to Associate Professor in 2017.

Dr. Lin's research group focuses on technological advancement and development of circular waste-based biorefinery for sustainable production of chemicals, materials and fuels, that contributes to reduction of environmental burden of waste disposal and enhancement of resource efficiency. Focusing on these topics, she has secured more than HK\$24 million research funding from various sources including the Innovation and Technology Commission (ITC) in Hong Kong and the Hong Kong Research Grant Council (RGC). She has been involved in over 18 research projects as Principal Investigator, which mainly focus on development of integrated biorefinery strategies includes valorization of agricultural residues, food, beverage, plastic and textile wastes.

Dr. Lin has published more than 150 peer-reviewed journal articles including well-recognised journals such as Chemical Society Review, Energy and Environmental Science, Journal of Hazardous Materials, and Chemical Engineering Journal. She was recognised as the World's top 2% scientists in the fields of Biotechnology and Environmental Science by Stanford University in 2020-2022. Dr. Lin has received regular invitations to share her research findings in Keynote and Plenary speeches at major international conferences, including Nature Forum on Plastics and Sustainability 2020 and Nature Conference "Waste Management and Valorisation for a Sustainable Future" 2021. She has been involved as an active member of various national and international commissions and committees such as the Scientific Board of the International Sustainable Chemistry Collaborative Centre (ISCC), Germany. She regularly serves as an external assessor for national and international funding institutions including National Research Foundation (NRF) in Singapore, Dutch Research Council (NWO), European Science Foundation (ESF).

### Research Interests

- Biorefinery
- Green and sustainable chemistry
- Food waste valorisation
- Nutrient recovery
- Waste and biomass valorisation

### Research Achievements/Industrial Collaborations

- Gold Medal at the 46<sup>th</sup> International Exhibition of Inventions of Geneva (Textile Waste Recycling Using a Biological Method)
- Gold medal with jury's commendation of the 44th International Exhibition of Inventions Geneva (Conversion of food waste into polylactic acid fibre (PLA))
- BESS Achievement Award 2016 & 2018, Bioenergy Biorefinery Conference – Southeast Asia 2016 & 2018 Bioenergy Society of Singapore (BESS)
- RITA Award 2016, The Hong Kong Research Institute of Textile and Apparel (HKRITA)
- PepisoCo Global R&D Research Forum Award

### Recent Journal Publications

- Wang, X., Li, C., Lam, C.H., Subramanian, K., Qin, Z.-H., Mou, J.-H., Jin, M., Chopra, S.S., Singh, V., Ok, Y.S., Yan, J., Li, H.-Y., **Lin, C.S.K.** 2022. Emerging waste valorisation techniques to moderate the hazardous impacts, and their path towards sustainability. *Journal of Hazardous Materials*, 423.
- To, M.H., Wang, H., Lam, T.N., Kaur, G., Roelands, S.L.K.W., **Lin, C.S.K.** 2022. Influence of bioprocess parameters on sphorolipid production from bakery waste oil. *Chemical Engineering Journal*, 429.
- Li, C., Ong, K.L., Li, X., Patria, R.D., Cui, Z., Qi, Q., Yan, J., **Lin, C.S.K.** 2021. Promising advancement in fermentative succinic acid production by yeast hosts. *Journal of Hazardous Materials*. 123414.

## Professor Wen-Xiong WANG

Associate Dean (Research and Graduate Studies)

Chair Professor of Environmental Toxicology

To Know more:



Email: wx.wang@cityu.edu.hk

Phone: +(852)-3442-4693



### Biography

Professor Wen-Xiong Wang received his Ph.D. in Coastal Oceanography from the State University of New York at Stony Brook (USA) in 1996, and after a short stay at Stony Brook as a postdoctoral researcher, he joined the Hong Kong University of Science and Technology (HKUST) as an Assistant Professor in October 1997. In 2003, he was promoted to Associate Professor, then Full Professor in 2007, and Chair Professor in 2014. He joined the City University of Hong Kong in January 2020 as a Chair Professor.

### Research Interests

- Metal ecotoxicology: Basic and applied aspects of metal chemistry and biology in the environment
  - Nanotoxicology: Chemistry and toxicology of metallic-based nanoparticles and counterparts
  - Estuary pollution and Green Aquaculture: The Pearl River Estuary: Pollution and ecosystem impacts
- More recent research focuses on developing the state-of-the-art bioimaging technologies enabling the direct visualizations of metals and their speciation at the subcellular/cellular levels.

### Research Achievements/Industrial Collaborations

Prof. Wang has authored >530 peer-reviewed publications on subjects related to metal ecotoxicology and biogeochemistry. His laboratory has trained numerous graduate students, postdoctoral and visiting scholars (~100). He is the corresponding or first author for the majority of his publications. He is one of the Editors of Environmental Toxicology and Chemistry, and the Associate Editor of Environmental Pollution, and serves on the editorial boards of many other international journals. His work is widely cited (>25,000 times), with a current H-index of 82 (Google Scholar). He received the prestigious Overseas Distinguished Young Scientist Award from the Chinese National Science Foundation in 2002, the Biwako Prize for Ecology in Japan in 2003 for his work on metals in aquatic systems, the Changjiang Chair Professorship in 2006, the First Prize in Natural Science from the Ministry of Education in China in 2009 for his work on the trophic transfer of metals, and the First Prize in Environmental Protection Science and Technology from the Ministry of Environmental Protection in 2016. He is an Elected Fellow of the Institute of Marine Engineering, Science and Technology 'FIMarEST' (UK-based), and an Elected Fellow of the Society for Environmental Toxicology and Chemistry (SETAC). Prof. Wang has conducted numerous consulting works for different government bodies of Hong Kong SAR (e.g., EPD, DSD, AFCD, CED) in areas of environmental risk assessments and water quality assessments.

### Recent Journal Publications

- Yan N, **Wang W-X**. 2022. Maternal transfer and biodistribution of citrate and luminogens coated silver nanoparticles in medaka fish. *Journal of Hazardous Materials* 433: 128862. <https://doi.org/10.1016/j.jhazmat.2022.128862>.
- **Wang W-X**. 2022. Bioimaging of metals in environmental toxicological studies: Linking localization and functionality. *Critical Reviews in Environmental Science and Technology* 52: 3384-3414. <https://doi.org/10.1080/10643389.2021.1934368>
- Meng J, **Wang W-X**. 2022. Highly sensitive and specific responses of oyster hemocytes to copper exposure: single-cell transcriptomic analysis of different cell populations. *Environmental Science & Technology* 56: 2497-2510. <https://doi.org/10.1021/acs.est.1c07510>

## Dr. Shauhrat S. CHOPRA

Assistant Professor



To Know more:



Email: [sschopra@cityu.edu.hk](mailto:sschopra@cityu.edu.hk)

Phone: +(852)-3442-4665

### Biography

Dr. Shauhrat Chopra obtained his Integrated Masters of Science in Systems Biology from the University of Hyderabad, India, in 2011. He received his Ph.D. in Civil and Environmental Engineering from the Swanson School of Engineering at the University of Pittsburgh, USA, in 2015. His doctoral dissertation was focused on resilience of complex systems including economic systems, industrial symbiosis, and critical infrastructure systems at urban and national levels. Before joining the School of Energy and Environment, Shauhrat worked as a Postdoctoral Researcher at the Institute for Environmental Science and Policy, University of Illinois at Chicago, on the U.S. EPA funded LCnano project focused on sustainable design of future transformative nano-enabled products. His data-driven research is focused on designing indicators for sustainability and resilience of the built environment in support of environmental decision-making.

### Research Interests

- Resilience urban transportation infrastructure
- Industrial ecology and symbiosis
- Life cycle assessment (LCA) for emerging materials and technology
- Food production systems
- Ecosystem goods and services management

### Research Achievements/Industrial Collaborations

- Sustainable Kitchens: A Certification Program (9231356) funded under 2019 Global Consortium of Sustainability Outcomes (GCSO) Grant Program  
Principal Investigator: Dr. Chopra Shauhrat Singh (SEE)  
Co-Investigators: Professor Wharton Christopher (Arizona State University), Professor Chan Chak Keung (SEE), Ms. Allen Julie (King's College, London), Ms. Fahy Samantha (Dublin City University)
- Network-Based Resilience Assessment of the Multi-Modal Public Transport System in Hong Kong (9048170) funded through 2019 UGC Early Career Scheme  
Principal Investigator: Dr. Chopra Shauhrat Singh (SEE)

### Recent Journal Publications

- Yeo, J., **Chopra, S. S.**, Zhang, L., & An, A. K. (2019). Life cycle assessment (LCA) of food waste treatment in Hong Kong: On-site fermentation methodology. *Journal of Environmental Management*, 240, 343-351. <https://doi.org/10.1016/j.jenvman.2019.03.119>
- Falinski, M. M., Plata, D. L., **Chopra, S. S.**, Theis, T. L., Gilbertson, L. M., & Zimmerman, J. B. (2018). A framework for sustainable nanomaterial selection and design based on performance, hazard, and economic considerations. *Nature Nanotechnology*, 13, 708-714. <https://doi.org/10.1038/s41565-018-0120-4>
- Brown, F. C., Bi, Y., **Chopra, S. S.**, Hristovsk, K. D., Westerhof, P., & Theis, T. L. (2018). End-of-Life Heavy Metal Releases from Photovoltaic Panels and Quantum Dot Films: Hazardous Waste Concerns or Not? *ACS Sustainable Chemistry & Engineering*, 6(7), 9369-9374. <https://doi.org/10.1021/acssuschemeng.8b01705>
- Mulrow, J. S., Derrible, S., Ashton, W. S., & **Chopra, S. S.** (2017). Industrial Symbiosis at the Facility Scale. *Journal of Industrial Ecology*, 21(3), 559-571. <https://doi.org/10.1111/jiec.12592>

## Dr. Liang DONG

Assistant Professor (Joint appointment with Department of Public and International Affairs)



To Know more:



Email: liadong@cityu.edu.hk

Phone: +(852)-3442-6221

### Biography

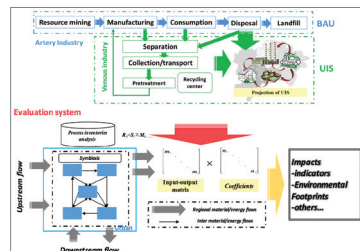
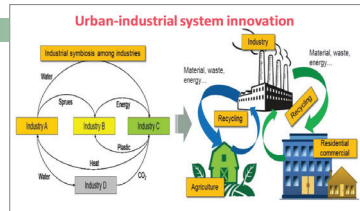
Dr. Dong Liang obtained his B.E. in Environmental engineering from Tsinghua University, China, and Ph.D. in Urban Environmental Studies from Nagoya University, Japan. Before joining City University of Hong Kong, he worked in National Institute for Environmental Studies, Japan, and Institute of Environmental Sciences (CML), Leiden University, Netherlands, in the field of industrial ecology, circular economy and low-carbon & eco-city planning. He also actively engaged in providing broad academic services, like consulting to UN-ESCAP, Energy Foundation and many local stakeholders of Industrial and Urban planning, to forward circular, eco and low-carbon urban transition in EU, Asia-Pacific and globe.

### Research Interests

- Urban sustainability and sustainable urban planning
- Environmental management & policies
- Industrial ecology and environmental system analysis
- Eco-industrial development (EID) and eco-industrial parks (EIPs)
- Low-carbon city, eco-city and smart city

### Research Achievements/Industrial Collaborations

- Novel and integrated planning and assessment model supporting eco and low-carbon city planning
- Holistic urban metabolism and environmental system analytical tool, integrating EEIOA, LCA and process analysis
- Applied in sustainable urban initiatives in Japan (eco and environmental future cities), China (low-carbon and circular cities), and Europe (smart cities)
- Sound collaborations with industrial managers, consulting companies and urban planners like CCID, EY and eco-industrial parks' managers



### Recent Journal Publications

- Yuanping Wang, Hong Ren, **Liang Dong**, Hung-Suck Park, Yuepeng Zhang, and Yanwei Xue, 2019. Smart solutions shape for sustainable low-carbon future: A review on smart cities and industrial parks in China. *Technological Forecasting and Social Change* 144, 103-117.
- **Dong, L.**, Wang, Y., Scipioni, A., Park, H.-S., Ren, J., 2018. Recent progress on innovative urban infrastructures system towards sustainable resource management. *Resources, Conservation and Recycling* 128, 355-359.
- **Dong, L.**, et al., 2017. Highlighting regional eco-industrial development: Life cycle benefits of an urban industrial symbiosis and implications in China. *Ecological Modelling* 361, 164-176.

## Professor Chi Keung Alvin LAI

Professor



To Know more:



Email: [alvinlai@cityu.edu.hk](mailto:alvinlai@cityu.edu.hk)

Phone: +(852)-3442- 6299

### Biography

Professor Alvin Lai received his bachelor B. Eng. in Building Services Engineering from Hong Kong Polytechnic University and his MPhil. from Hong Kong University. He obtained his Ph.D. from Imperial College. He spent three years working as a post-doctorate fellow in University of California, Berkeley before joining Nanyang Technology University, Singapore in December 2000. His main research areas focus on indoor air quality, developing disinfection technology for indoor pathogens, pollutant exposure control, aerosol science and aerosol filtration technology.

### Research Interests

- Indoor Air Quality
- Airborne Pathogen Control
- Innovative Method for Disinfection
- Engineering Control for Indoor Air Pollutants
- Environmental Health

### Research Achievements/Industrial Collaborations

- Research Impact Fund, PC, 2021, developing synergistic disinfection using far-UVC and negative air ions.
- Collaborative Research Fund, PI, 2022, studying an intelligent ventilation control, human mobility tracking and indoor environmental quality analysis system for the auxiliary healthcare modules.
- Health and Medical Research Fund, PI, 2022, developing a rapid surface disinfection system for healthcare environments.

### Recent Journal Publications

- Lu, Y.H., Wu, Zhang, H.H., Li, W.S., **Lai, A.C.K.** Synergistic disinfection of aerosolized bacteria and bacteriophage by Far UVC (222 nm) and negative air ions. *Journal of Hazardous Materials*. <https://doi.org/10.1016/j.jhazmat.2022.129876>.
- Nunayon, Sunday S., Zhang, H.H., **Lai, A.C.K.** Evaluating the efficacy of a new upper-room UVC-LED irradiation device in inactivating *Escherichia coli* under different disinfection range, air mixing, and irradiation conditions. *Journal of Hazardous Materials*. <https://doi.org/10.1016/j.jhazmat.2022.129791>.
- Nunayon, Sunday S. Zhang, H.H., Chan, V., Kong, R.Y.C., **Lai, A.C.K.** Study of synergistic disinfection by UVC and positive/negative air ions for aerosolized *Escherichia coli*, *Salmonella typhimurium*, and *Staphylococcus epidermidis* in ventilation duct flow. *Indoor Air*. 2021. <https://doi.org/10.1111/ina.12957>.



## Dr. Wanxin Li

Associate Professor

To Know more:



Email: [wanxin.li@cityu.edu.hk](mailto:wanxin.li@cityu.edu.hk)

Phone: +(852)-3442-9651

Webpage: [http://www.cityu.edu.hk/see/personal/Wanxin\\_LI.htm](http://www.cityu.edu.hk/see/personal/Wanxin_LI.htm)



### Biography

Dr. Wanxin Li has worked with the World Bank, OECD and Tsinghua University in the past. Her research focuses on policy experimentation and evaluation for advancing environmental governance and quality of life in China. In addition to the research community, Dr. Li's work also speaks directly to policy-makers. Single authored the OECD 2009 report entitled "Eco-innovation policies in the People's Republic of China". Being invited to speak at forums such as the Policy Dialogue with the Ministry of Environmental Protection in Beijing, the OECD International Conference on Environmental Compliance Assurance in Paris, the Trade and Environment Session of the WTO 2011 Public Forum in Geneva, and others. Specialties include policy design; policy analysis and evaluation; governance; and research methods.

### Research Interests

- Policy design/experimentation
- Environmental and social governance
- Information transparency
- Subjective well-being
- Science and technology in society

### Research Achievements/Industrial Collaborations

- Analytical framework for assessing institutional capacity of government agencies and/or other organizations
- Analytical framework for assessing environmental management tools
- Big data analysis integrating content analysis of policy documents and social media data with statistical analysis of socio-economic data
- Training program for the World Bank Institute on Institutional Strategies for Sustainable Development
- Policy papers and training programs for the EU-China Environmental Governance Programme
- Policy experimentation and evaluation of individual behavioural changes for the Suzhou municipal government, Hong Kong Rugby Union, and City University of Hong Kong

### Recent Journal Publications

- **Li, Wanxin** (January 2017). An institutional analysis of central-local relations on land use decision-making in China. *Journal of China University of Geosciences (Social Sciences Edition)*. 17(1). 135-148.
- **Li, Wanxin** & Mauerhofer, Volker. (Aug 2016). Behavioral patterns of environmental performance evaluation programs. *Journal of Environmental Management*. 182. 429-435. doi:10.1016/j.jenvman.2016.07.085.
- **Li, Wanxin** (Mar 2016). Failure by design - national mandates and agent control of local land use in China. *Land Use Policy*. 52. 518 - 526. doi:10.1016/j.landusepol.2014.12.010.

## Dr. Lin ZHANG

Associate Professor

To Know more:



Email: l.zhang@cityu.edu.hk

Phone: +(852)-3442-4012



### Biography

Dr. Lin Zhang studied in Peking University where he received a Bachelor in Mechanical Engineering and a Double Bachelor in Economics. He then moved to Switzerland where he earned his master's degree in management and Ph.D. in economics from ETH Zurich. Before joining the faculty of City University of Hong Kong, he was a postdoctoral researcher in the Center of Economic Research at ETH Zurich. He was also a researcher associated with the Energy Science Center, Simulation Lab, and the Competence Center for Research in Energy, Society, and Transition in Switzerland. Besides his position at School of Energy and Environment, Dr. Zhang has a joint appointment in the Department of Public Policy, College of Liberal Arts and Social Sciences of the City University of Hong Kong.

Dr. Zhang's research aims to develop improved quantitative modelling approaches for the design, evaluation, and upgrade of sustainable energy policies at local, regional, and global levels. He has received research grants from Swiss Federal Office of Energy, Swiss National Science Foundation, Research Grants Council in Hong Kong, European Environmental Agency, among others. He serves as a reviewer for more than 20 SSCI listed journals and a committee member of international conferences.

### Research Interests

- Energy and environmental economics
- Efficiency and productivity analysis
- Energy policy and sustainable development
- Computable general equilibrium modelling

### Research Achievements/Industrial Collaborations

- Outstanding reviewers for international journals including Economic Modelling, Journal of Environmental Management
- Top 10% of authors on SSRN (the largest social science research network) by total new downloads
- External expert reviewer for the Competition Commission of Hong Kong
- Global Top 500 young economists for Lindau Nobel Laureate Meetings on Economic Sciences
- Industrial collaboration on energy efficiency with Towngas

### Recent Journal Publications

- Y. An, **L. Zhang**, P.K. Adom (2019): Economics of wastewater management in Chinas industry. Environment and Development Economics, forthcoming.
- J. Metta, Y. An, H. Zheng, **L. Zhang** (2019): Potentials and opportunities towards the Low Carbon Technologies: From literature review to new classification. Critical Reviews in Environmental Science and Technology, forthcoming.
- B. Hu, Z. Li, **L. Zhang** (2019): Long-run dynamics of sulphur dioxide emissions, economic growth and energy efficiency in China. Journal of Cleaner Production, 227, 942-949.





**General Enquiry**

Email: [see.enquiry@cityu.edu.hk](mailto:see.enquiry@cityu.edu.hk)

Address: G5703, 5/F, Yeung Kin Man Academic Building,  
City University of Hong Kong,  
Tat Chee Avenue, Kowloon, Hong Kong SAR

