College of Engineering
香港城市大學
City University of Hong Kong

E-BULLETIN

ENGINEERING THE FUTURE:
IGNITING OPEN INNOVATION

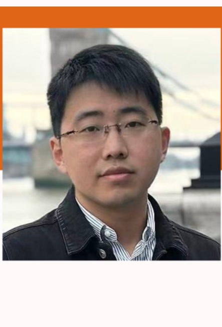
Issue 85
(Nov 2026)

NEW FACULTY

Prof SONG Yuchen, Assistant Professor of Department of Architecture and Civil Engineering

Prof SONG Yuchen joined the Department of Architecture and Civil Engineering in October 2026. Holding a PhD from the University of Sydney, he previously completed postdoctoral fellowships at Imperial College London and The Hong Kong Polytechnic University. A recipient of the ASCCS* 2024 Best Steel Structures Paper Award, Prof SONG brings extensive expertise in high-performance metallic materials to enhance structural sustainability and resilience.

*ASCCS stands for the Conference on Advances in Steel-Concrete Composite Structures.



EVENT

College of Engineering
CEDD
土木工程拓展署
Civil Engineering and Development Department
Memorandum of Understanding Signing Ceremony
合作備忘錄簽署儀式

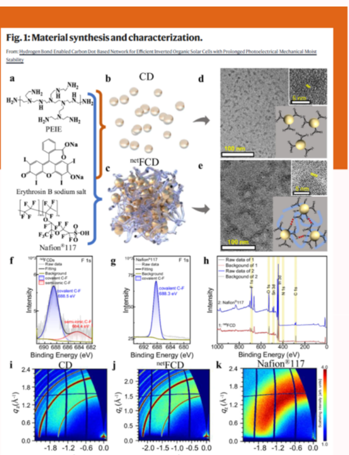
CENG and CEDD sign MoU to support Hong Kong's development

The College of Engineering (CENG) and the Civil Engineering and Development Department (CEDD) recently co-hosted an MoU signing ceremony cum professional forum. Aligning with Hong Kong's new Five-Year Plan and the Northern Metropolis development, this partnership establishes a robust framework for collaboration. Together, CENG and CEDD will advance research and innovation in sustainable engineering, smart infrastructure, and cutting-edge construction technologies, fostering academic-government synergies to drive Hong Kong's sustainable future growth.

RESEARCH

CityUHK secures major national research grants, including top-tier NSFC funding

City University of Hong Kong (CityUHK) recently secured prestigious national and Guangdong-Hong Kong-Macao Greater Bay Area research grants. Notably, 41 projects were selected under the 2026 National Natural Science Foundation of China (NSFC) Young Scientist Scheme. Among these, two College of Engineering scholars received top-tier Category A funding of RMB4M each in Mechanical Engineering and Materials Science and Engineering. Additionally, CityUHK received 14 General Programme awards and six Shenzhen Medical Research grants to support long-term national development.



Prof Alex JEN reports novel carbon dot network for highly efficient and stable flexible organic solar cells in Nature Communications

A research team led by Prof Alex JEN from the Department of Materials Science and Engineering published a study titled "Hydrogen bond-enabled carbon dot-based network for efficient inverted organic solar cells with prolonged photoelectrical-mechanical-moist stability" in *Nature Communications*. The study discusses the development of an innovative carbon-based layer that significantly improves solar cell performance. Their new design achieves a certified power conversion efficiency of nearly 20%. These cells demonstrate remarkable resilience, maintaining strong performance after 1,800 hours in humid conditions and surviving 10,000 bending cycles. This advancement brings flexible, eco-friendly solar energy much closer to practical, everyday commercial use.

Prof Alex JEN's team publishes in Nature Photonics high-entropy molecular contact method for highly efficient and stable perovskite solar cells

A study titled "High-entropy molecular contacts enable high-efficiency and stable perovskite solar cells" published in *Nature Photonics* by Prof Alex JEN's team from the Department of Materials Science and Engineering demonstrates a major leap in perovskite solar cell performance and durability. While traditional cells frequently fail due to the environmental breakdown of single-molecule contact layers, the researchers address this vulnerability by blending three similar molecules to form a resilient "high-entropy" contact layer. This innovation enables inverted perovskite solar cells to achieve an impressive 27.50% efficiency alongside exceptional long-term stability during accelerated aging tests.

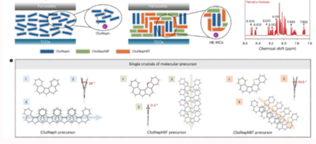


Fig. 1: Molecular design rule for HE-MCs and intrinsic properties.
From: High-entropy molecular contacts enable high-efficiency and stable perovskite solar cells
a
b
c
d
e
Perovskite
TCOs
Thermal ageing
HE-MCs
CbzNaph
CbzNaphBF
CbzNaphBT
Ternary mixture
Chemical shift (ppm)
Single crystals of molecular precursor
CbzNaph precursor
CbzNaphBF precursor
CbzNaphBT precursor

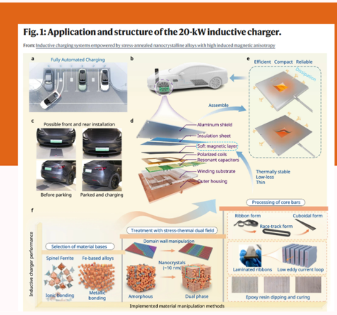


Fig. 1: Application and structure of the 20-kW inductive charger.

Prof Derrick JIANG's team introduces advanced inductive charging system for electric vehicles using nanocrystalline alloys in Nature Communications

Prof Derrick JIANG from the Department of Electrical Engineering and his collaborators published a paper in *Nature Communications* titled "Inductive charging systems empowered by stress-annealed nanocrystalline alloys with high induced magnetic anisotropy". To overcome the efficiency and thermal limits of traditional ferrite-based electric vehicle chargers, the team developed an advanced inductive charging system using stress-annealed Fe-based nanocrystalline alloys with optimised moderate permeability. Fabricated via a coil-aligned lamination technique, this co-design achieves an impressive 98.51% AC-AC efficiency, a power density of 9.55 kW/L, and high-power thermal stability, paving the way for automated electric vehicle charging.

Ultrastrong titanium alloy developed by Prof Jian LU's research team features in Nature Materials

A research team led by Prof Jian LU from the Department of Mechanical Engineering and Prof HE Chunnian from Tianjin University has developed an advanced Ti–7.5Al–3.3Cr titanium alloy using laser powder bed fusion optimised through a machine learning and high-throughput experiment pipeline. This technique published in *Nature Materials* under the title "Sub-10-nm stacking bands enable ultrastrong additively manufactured titanium" produces a unique nanostructure featuring sub-10-nm stacking bands. Consequently, the alloy achieves a yield strength of ~1.5 GPa, an ultimate tensile strength exceeding 1.7 GPa, ~7.5% uniform elongation, and a specific strength of ~380 MPa cm³ g⁻¹, while maintaining strong performance up to 550°C. This innovation enables the scalable manufacturing of complex, lightweight structural components with superior mechanical synergies.

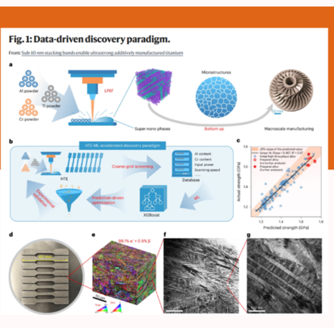


Fig. 1: Data-driven discovery paradigm.

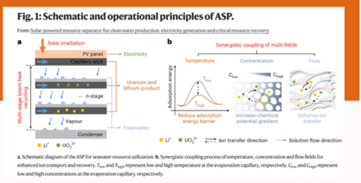


Fig. 1: Schematic and operational principles of ASP.

Nature Water paper by Prof Jian LU's research team explains how seawater resource separator produces clean water, power, and critical mineral resources

Led by Prof Jian LU from the Department of Mechanical Engineering, a research team has designed an innovative adsorption-coupled solar-powered seawater resource separator (ASP). Published in *Nature Water*, their paper titled "Solar-powered resource separator for clean water production, electricity generation and critical resource recovery" introduces a system that harnesses solar energy to concurrently generate freshwater, clean electricity, and critical minerals like lithium and uranium. By integrating advanced heat recovery with multi-field effects, the ASP dramatically boosts performance, delivering outstanding water collection, power output, and mineral recovery rates in real-world outdoor tests.

Prof WANG Feng's research team presents high-definition stretchable quantum dot displays in Nature Nanotechnology

In their paper "Stretchable quantum dot displays achieve high definition", published in Nature Nanotechnology, Prof WANG Feng's team from the Department of Materials Science and Engineering introduces a breakthrough technique for next-generation flexible electronics. Traditional stretchable displays often lose performance and pixel clarity because they rely on insulating soft elastomers. To solve this, the researchers developed a strategy called LIFT, combining interfacial ligand engineering and thermally assisted intaglio film transfer printing. This innovation allows quantum dots to form ultrabright, high-resolution, and intrinsically stretchable displays without sacrificing efficiency, paving the way for advanced wearable devices, soft robotics, and conformal biomedical technologies that fit seamlessly onto human skin.

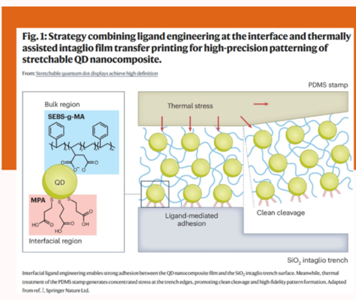
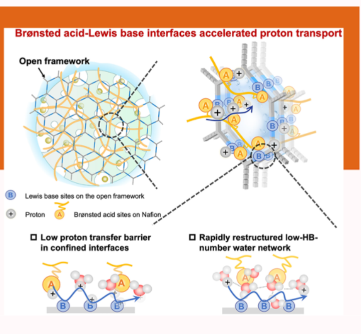


Fig. 1: Strategy combining ligand engineering at the interface and thermally assisted intaglio film transfer printing for high-precision patterning of stretchable QD nanocomposite.


Brønsted acid-Lewis base interfaces accelerated proton transport
Open framework
Lewis base sites on the open framework
Proton
Brønsted acid sites on Nafion
Low proton transfer barrier in confined interfaces
Rapidly restructured low-HB-number water network

Prof YANG Jiarui's Science paper discusses nitrogen-rich nanosheets that boost fuel cell proton conductivity over sixfold

Prof YANG Jiarui and his team from the Department of Materials Science and Engineering have published a paper titled "Open framework–based Brønsted acid–Lewis base interfaces boost proton transfer in the fuel cells" in *Science*. The researchers developed innovative composite ionomers by combining nitrogen-rich open-framework nanosheets with Nafion polymer nanofilms. This creates confined Lewis acid-base interfaces that significantly lower proton-transfer barriers, accelerate the reorganisation of interfacial water networks, and enrich protons near catalytic sites. Consequently, proton conductivity increased more than sixfold, enabling fuel cells to achieve high power densities while operating with low platinum loadings.

Electrochemical lithium-ion intercalation-based exfoliation technology by Prof ZENG Zhiyuan's team features in Nature Reviews Electrical Engineering

In their paper titled "Electro-exfoliation of two-dimensional materials for printed electronics," published in *Nature Reviews Electrical Engineering*, Prof ZENG Zhiyuan's team from the Department of Materials Science and Engineering examines electrochemical lithium-ion intercalation-based exfoliation technology. By addressing remaining hurdles, this method is expected to progress into a fully scalable and industry-compatible manufacturing platform. The work emphasises that overcoming these challenges will enable the efficient production of high-quality two-dimensional materials specifically designed for advanced printed electronics applications.

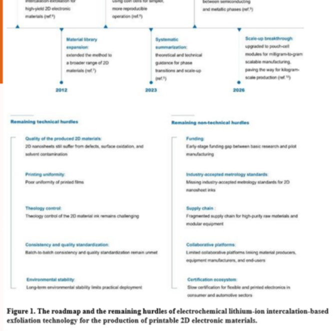


Figure 1. The roadmap and the remaining hurdles of electrochemical lithium-ion intercalation-based exfoliation technology for the production of printable 2D electronic materials.

FACULTY ACHIEVEMENT

Prof Derrick JIANG's team honoured with Second Prize at 12th CPSS Science and Technology Awards

A research team led by Prof Derrick JIANG from the Department of Electrical Engineering has been awarded Second Prize in the Science and Technology Progress Award category at the 12th China Power Supply Society (CPSS) Science and Technology Awards. The team earned this prestigious recognition for their project, "Key Techniques of High-Power-Density Wireless Power Transfer for UAVs", which addresses key technical challenges in high-power-density design, lightweight integration, and high-reliability operations, establishing robust wireless charging theories for unmanned aerial vehicles in complex environments.

Research team led by Prof Derrick JIANG wins Best Paper Award at ZPEC 2026

Supervised by Prof Derrick JIANG, a research team from the Department of Electrical Engineering, comprising postdoctoral researchers Dr WANG Xiaosheng and Dr MA Tianlu, alongside PhD students Mr YANG Junhui, Mr ZHU Zhaozheng, and Mr GUO Hao, has won the Best Paper Award at the International Zhejiang Power Electronics Conference (ZPEC) 2026 for their paper, "Dead-Zone Elimination for Voltage Transient Synchronization Method in Bidirectional Wireless Power Transfer Systems".

Best Paper Awards
ZPEC 2026

Double Honour for Prof LUK Kwai Man: ACES-China Technical Excellence Award 2026 & HKAE Presidency

Prof LUK Kwai Man in the Department of Electrical Engineering has recently received two prestigious honours celebrating his outstanding scientific leadership and career achievements. He was awarded the ACES-China Technical Excellence Award 2026 by the International Applied Computational Electromagnetics Society (ACES) China Chapter for his contributions to computational electromagnetics and education. In addition, Prof LUK was elected President of the Hong Kong Academy of Engineering (HKAE), a prestigious appointment that highlights his exceptional scientific leadership and standing in the engineering community.

STUDENT ACHIEVEMENT

EE PhD students awarded Gold Medal at WorldInvent Singapore 2026

Congratulations to PhD students Mr REN Sheng, Mr CAO Hanqing, Mr GUO Hao, Mr YANG Junhui, and Mr ZHU Zhaozheng from the Department of Electrical Engineering (EE) on winning the Gold Medal at WorldInvent Singapore 2026. Supervised by Prof Derrick Jiang, the team secured the win with their project, "Revolutionizing AI Power – High Efficiency High Power Delivery Technology Based on Novel Nanocrystalline".

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quet & Awards Ceremo

Dr JIANG Hao wins Young Scientist Award at ACES-China 2026

Dr JIANG Hao, a Postdoctoral Fellow in the research team led by Prof GUO Yongxin of the Department of Electrical Engineering, has been awarded the prestigious Young Scientist Award 2026 at the IEEE International Applied Computational Electromagnetics Society Symposium (ACES-China) in recognition of his outstanding research contributions, technical excellence, and innovative work in the field of applied computational electromagnetics. The Young Scientist Award is presented to promising early-career researchers who demonstrate exceptional potential and impact in their research domains.

EE graduate Miss WONG Ling Chi receives 2026 Outstanding Power and Energy Engineering Graduate Award by IET

Miss WONG Ling Chi, a 2026 graduate of the Department of Electrical Engineering, has been awarded the 2026 Outstanding Power and Energy Engineering Graduate Award by the Power and Energy Section of The Institution of Engineering and Technology (IET) Hong Kong. This prestigious award recognises outstanding performance, leadership, and dedicated commitment to the field of power and energy engineering.

IET The Institution of Engineering and Technology
Event Photos:
Annual Power Dinner 2026
Organised by Power & Energy Section
18 September 2026
Cordis Hotel, Hong Kong