E-BULLETIN

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

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RANKING

CENG excels in QS World University Rankings by Subject 2026
City University of Hong Kong (CityUHK) has achieved outstanding results in the QS World University Rankings by Subject 2026, with the College of Engineering (CENG) delivering standout performances across key disciplines.

Materials Science has surged 13 places from 52nd to 39th globally, claiming the No. 1 position in Hong Kong for the first time across all major ranking systems: QS, ShanghaiRanking's Global Ranking of Academic Subjects, U.S. News & World Report, and Clarivate's Essential Science Indicators.

CENG also showed strong citation impact in these areas:

Broad Subject Area
Engineering & Technology (#11 globally)

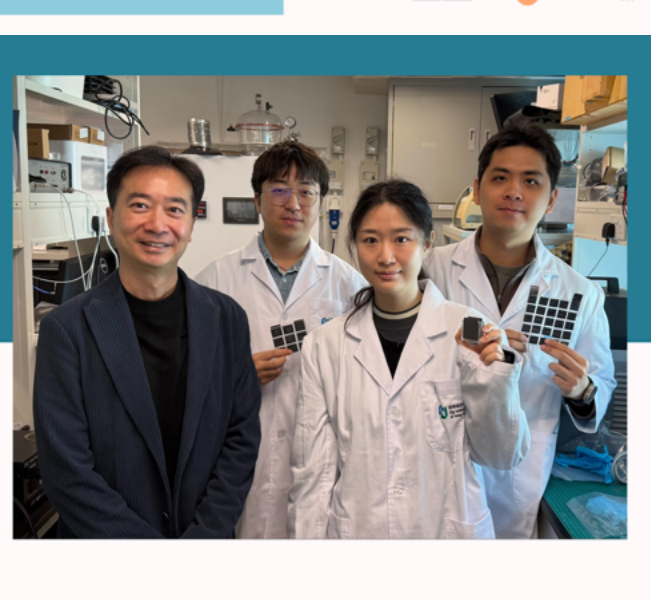
Subjects
Engineering – Mechanical, Aeronautical & Manufacturing (#2 globally)
Architecture/Built Environment (#11 globally)
Engineering – Electrical & Electronic (#13 globally)

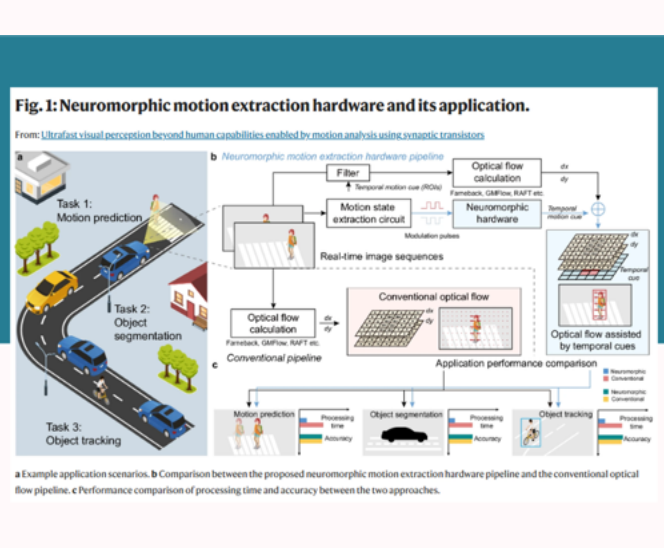
These results underscore the College's research excellence, building on accolades like 120 faculty members named among Stanford's "World's Top 2% Scientists 2025" and 19 scholars recognised as Clarivate Highly Cited Researchers 2025.

CityUHK named the "Most International University in the World" for the 3rd consecutive year
City University of Hong Kong (CityUHK) has been ranked the "Most International University in the World" by Times Higher Education (THE) World University Rankings 2026, securing the top position for the 3rd year running. This prestigious recognition underscores CityUHK's leadership in cultivating a truly global academic environment. The ranking is based on an evaluation of 2,191 institutions across 42 countries and regions. CityUHK excelled particularly in the proportions of international students and staff, international research co-authorship, and international reputation.

RESEARCH

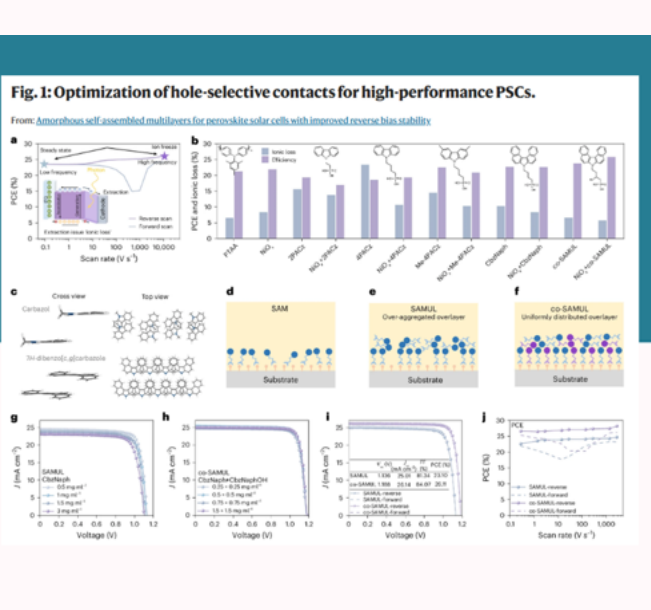
Prof Tony FENG's PEI thermocell breakthrough appears in Nature Communications
Waste heat from factories and gadgets offers significant clean energy potential, but devices that convert it to electricity lack power and durability. In the paper "Design of polyethyleneimine additives that enable long-lifetime thermocells for low-grade heat harvesting" published in *Nature Communications*, Prof Tony FENG's team adds polyethyleneimine (PEI) to thermocells, that trigger four mechanisms: enhanced heat triggered reactions, improved electrode ion movement, cool side ion clustering for higher voltage, and accelerated hot side processes, dramatically boosting power generation by over five times. Its self-limiting chemistry maintains stability for over 1,000 hours. A prototype panel produces more than 5 volts and 7.5 milliwatts across a 50°C gap, unlocking practical green electricity from everyday waste heat sources.

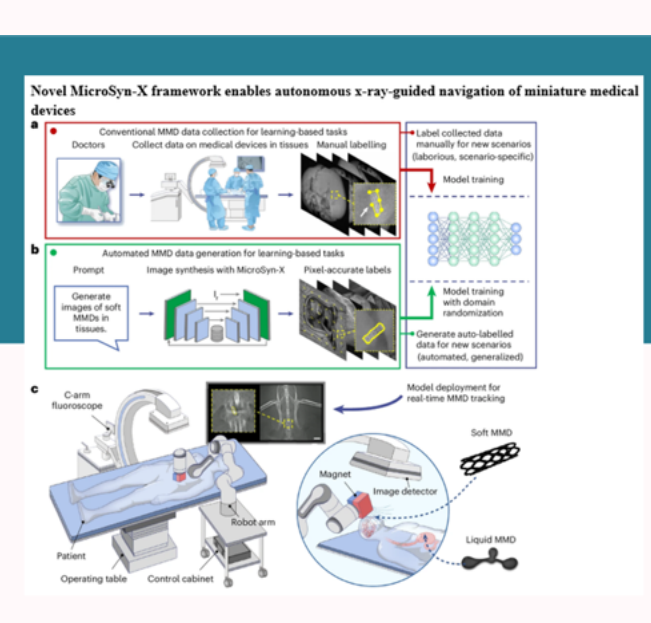




Prof GUO Xiaoyu's ultrafast vision chip featured in Nature Communications
Prof GUO Xiaoyu from the Department of Mechanical Engineering teamed up with experts from Beihang University, Beijing Institute of Technology, and the University of Cambridge to build brain-like "smart vision" hardware. Their study, titled "Ultrafast visual perception beyond human capabilities enabled by motion analysis using synaptic transistors", was published in *Nature Communications*. Unlike conventional cameras that capture images frame by frame, the team's 2D transistor-based chip mimics the way the human eye detects motion, enabling it to predict and track moving objects up to 400 times faster than human vision, with remarkable precision. This breakthrough unlocks new possibilities for real-time perception in high-speed, unpredictable environments.

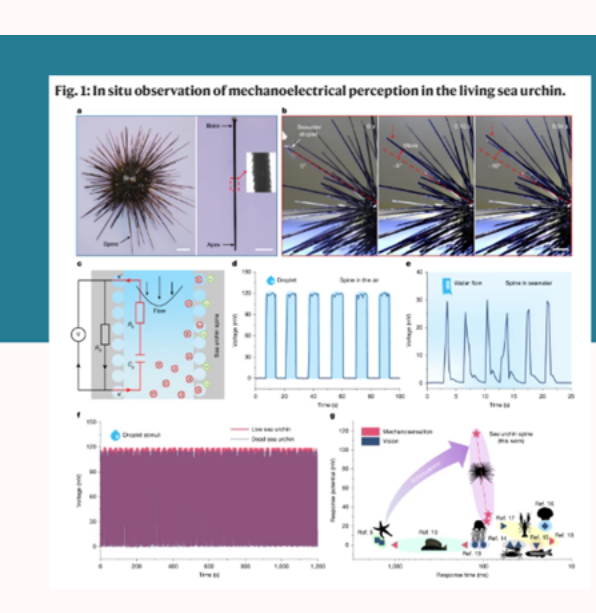
Prof Alex JEN's perovskite solar cell durability featured in Nature Energy
Prof Alex JEN and his research team from the Department of Materials Science and Engineering published a paper titled "Amorphous self-assembled multilayers for perovskite solar cells with improved reverse bias stability" in *Nature Energy*. The breakthrough team introduces a novel ultra-thin disordered multi-layer coating. It bonds tightly to surfaces, conducts electricity efficiently and blocks damaging ion movement, a key flaw in earlier designs. Solar cells now achieve over 26% efficiency, withstand high reverse voltages and stay remain stable beyond for over 3,000 hours with minimal performance loss. This advances next-generation solar technology for reliable real-world applications.

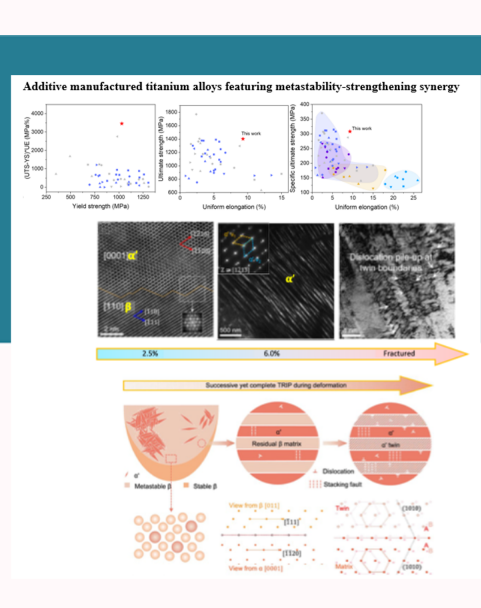




Prof KANG Wenbin's AI X-rays advance robot surgery featured in Nature Machine Intelligence
Prof KANG Wenbin from the Department of Mechanical Engineering and his team published a paper titled "Synthetic X-ray-driven tracking and control of miniature medical devices" in *Nature Machine Intelligence*. While tiny, flexible robots promise minimally invasive surgeries, tracking them with real X-rays is often hindered by noise and blurring. The team's MicroSyn-X solves the problem by generating perfect synthetic X-ray images already labelled to train AI without manual effort. Using this technology, computers then detect and guide soft magnetic robots through tissues in lab tests and live animal trials. Alongside releasing their unique X-ray dataset publicly, the team demonstrated that this robotic approach delivers speed and accuracy, even in tough conditions.

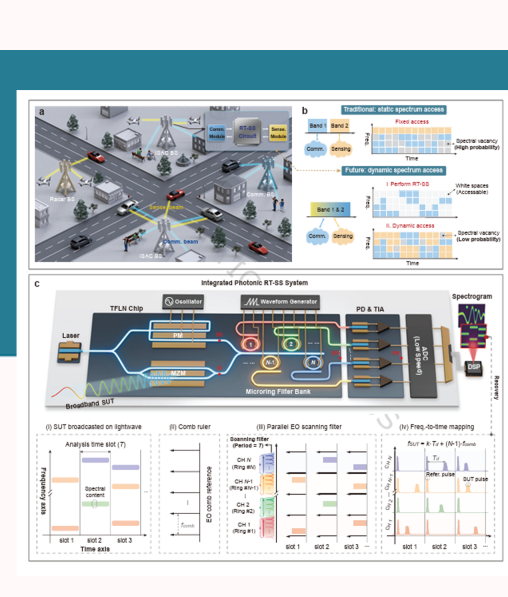
Prof LU Jian's team reports in Nature that sea urchin spines function as rapid water sensors
Prof LU Jian from the Department of Mechanical Engineering revealed the hidden superpower of sea urchin spines in "Echinoderm stereom gradient structures enable mechanoelectrical perception", published in *Nature*. Long known only for strength, these sponge-like bony structures generate 116 mV electric signals in just 88 milliseconds when water flows over them, 1,000 times faster than urchin eyes. The gradient pore design creates this remarkable sensitivity. The team 3D-printed replica spines that produce three times more voltage and eight times sharper signals than uniform versions. They also developed battery-free sensors for real-time underwater flow detection without extra equipment. This discovery redefines the nature of cellular materials, such as bone and sponges, for advanced underwater sensing applications.

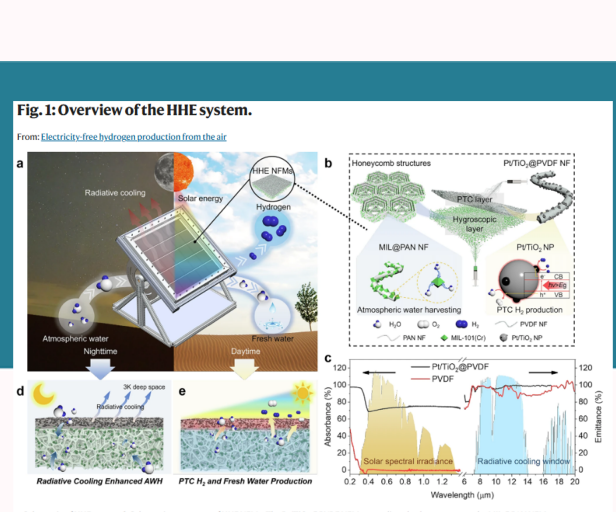




Prof LU Jian unveils super titanium study in Nature Communications
Prof LU Jian's team from the Department of Mechanical Engineering has published a study titled "Harnessing strengthening–metastability synergy for extreme work hardening in additively manufactured titanium alloys" in *Nature Communications*. His team developed a next-generation titanium alloy via advanced 3D printing that remains ultra-strong and ductile, even under stress. By engineering the alloy's internal structure to strengthen under stress, the team achieved remarkable toughness and resilience without compromising flexibility. This "super titanium" outperforms existing 3D-printed titanium, steels, and superalloys. It is a promising material for demanding applications ranging from aerospace components to durable, lightweight consumer electronics.

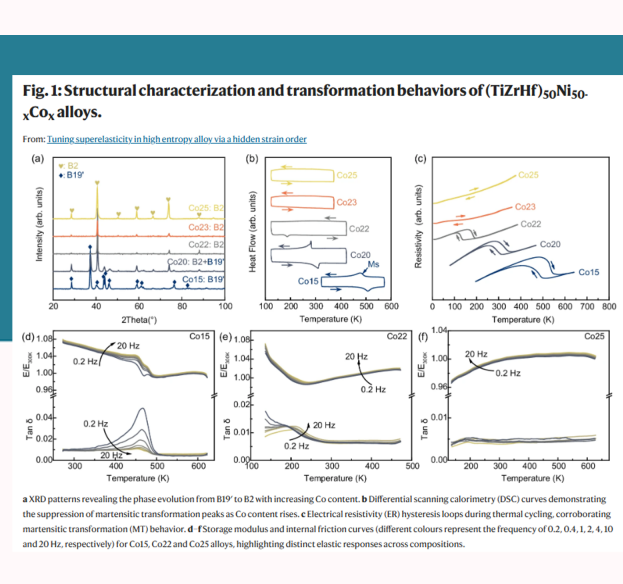
Prof WANG Cheng, Prof Alex YU and Prof FENG Hanke unlock 6G's breakthrough in Nature Communications
Prof WANG Cheng, Prof Alex YU, and Prof FENG Hanke from the Department of Electrical Engineering published their study titled "Integrated photonic ultrawideband real-time spectrum sensing for 6G wireless networks" in *Nature Communications*. In the paper, they demonstrate that a tiny photonic chip can instantly scan super-wide radio frequencies from microwaves to sub-terahertz waves, finding empty channels in microseconds. Covering 57.5 GHz to 120 GHz with a response time under 110 nanoseconds, it keeps 6G networks smooth for holographic calls and smart cities by avoiding crowded airwaves, even in the presence of radar interference.





Prof ZENG Xiaocheng and Prof Steven WANG advance hydrogen technology in Nature Communications
A research team led by Prof ZENG Xiaocheng from the Department of Materials Science and Engineering and Prof Steven WANG from the Department of Mechanical Engineering published a paper titled "Electricity-free hydrogen production from the air" in *Nature Communications*. Their team has invented a new way to produce clean hydrogen fuel using only sunlight and air, without needing electricity and pure water. Nanofiber membrane panels pull water from humid air at night, then split it into hydrogen gas by sunlight during the day. This cheap, eco-friendly system could provide green energy globally.

Customisable super-springs by Prof ZHAO Shijun and Prof YANG Yong featured in Nature Communications
A research team led by Prof ZHAO Shijun and Prof YANG Yong from the Department of Mechanical Engineering published a paper titled "Tuning superelasticity in high entropy alloy via a hidden strain order" in *Nature Communications*. Their team has developed a superelastic metal that snaps back after extreme bending. By carefully mixing metals, they created hidden atomic stress patterns that dictate perfect bending and rebound every time. This breakthrough enables "smart springs" that adapt on demand for micro-machines, precision robotics, and shock absorbers.

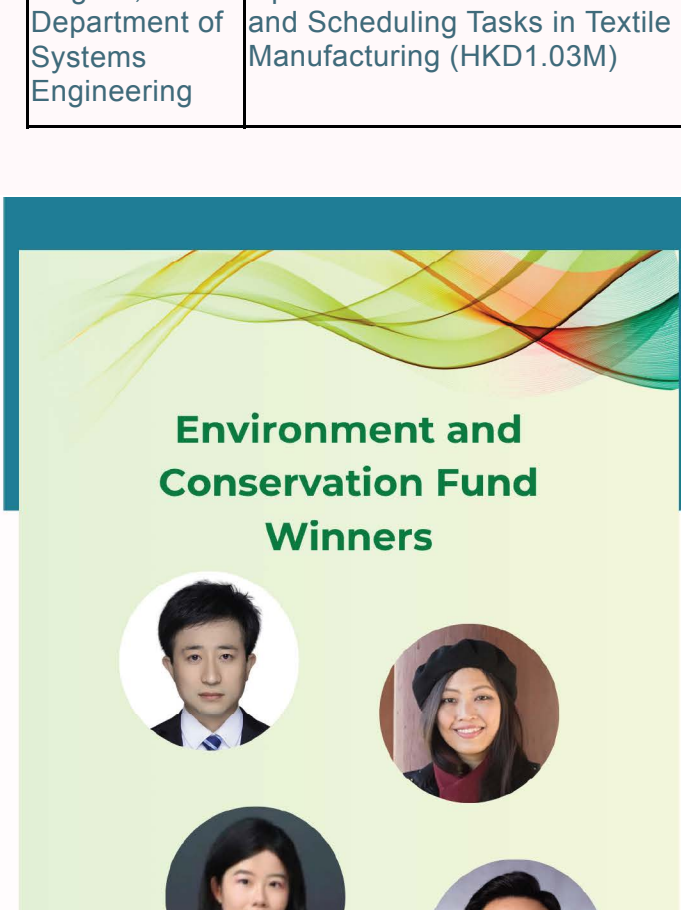


Congratulations to following faculty members for receiving Innovation and Technology Fund for their research projects

Project coordinator	Project
Prof HUANG Gongsheng, Department of Architecture and Civil Engineering	Development of Condensation-Free Personalized Radiant Cooling System (HKD1.40M)
Prof JIAO Dengwu, Department of Architecture and Civil Engineering	3D Printed Permanent Formwork Technology with Low-Carbon Ultra-High Performance Concrete for Sustainable Construction 3D (HKD1.37M)
Prof Ray CHEUNG, Department of Electrical Engineering	Advanced Transform Frameworks on Secure RISC-V for Smart City Infrastructure (HKD1.33M)
Prof Michael TSE, Department of Electrical Engineering	Power Conversion Solutions Via Negative Power Reactance (HKD1.36M)
Prof Johnny HO, Department of Materials Science and Engineering	Investigation on the Preparation Process of Advanced Self-supported Nanoarray Electrodes for the Wide-power-load, Fast-response-time Electrolyzer Technology (HKD1.17M)
Prof SUN Yuxiang, Department of Mechanical Engineering	Embodied Artificial Intelligent Robotic Guide Dogs: Research on Key Technologies and Prototype Development (HKD1.38M)
Prof CHU Yinghao, Department of Systems Engineering	A Hybrid AI Acceleration and Optimization Solution for Vision and Scheduling Tasks in Textile Manufacturing (HKD1.03M)

ACE and MNE faculty receive HKD2.37M ECF funding for sustainable innovation
Faculty members from the Department of Architecture and Civil Engineering (ACE) and the Department of Mechanical Engineering (MNE) have received Environmental and Conservation Fund (ECF) of HKD2.37M to pioneer sustainable engineering solutions supporting Hong Kong's Net Zero Emissions goals.

Project coordinator	Funded Projects
Prof JIAO Dengwu, Department of Architecture and Civil Engineering	Enhanced Valorization of Recycled C&D Fines in Developing Smart Cement-based Repair Materials via Magneto-Rheology Control (HKD0.50M)
Prof Amy TAN, Department of Architecture and Civil Engineering	Advancement of Micro-aerated Anaerobic Digestion (MAAD) Technology for Saline Sludge Treatment Toward Enhanced Energy-Environment Synergies (HKD0.82M)
Prof WANG Mingzhu, Department of Architecture and Civil Engineering	AI-enabled Digital Twin for Robust Sewer Condition Assessment and Environmentally-informed Rehabilitation (HKD0.50M)
Prof KANG Wenbin, Department of Mechanical Engineering	Self-powered Piezoelectric Metamaterial Barriers for Road Traffic Noise Active Control and Energy Harvesting (HKD0.56M)



FACULTY ACHIEVEMENT

CENG wins four awards at 51st Geneva Inventions Exhibition
CityUHK secured 27 awards at the 51st International Exhibition of Inventions Geneva. Among these achievements, the College of Engineering (CENG) won four prestigious awards: one Gold Medal with Jury Congratulations, one Gold Medal, one Silver Medal, and one Bronze Medal. These achievements highlight CENG's excellence in engineering innovation and real-world technological solutions.

READ MORE

STUDENT ACHIEVEMENT

PhD student received Top 10 International Student Award 2025
Mr LI Guangda, a PhD student from the Department of Architecture and Civil Engineering has been selected as one of the Top 10 Outstanding International Students in Hong Kong 2025 by the Young Expats Association. Selected from more than 100 candidates across 10 higher institutions in Hong Kong, Mr LI was recognised for his outstanding achievements in academic research and professional development, as well as for his contributions to social services, cultural heritage, community building, and the promotion of youth exchange between the Chinese Mainland and Hong Kong.