



**Issue 56 (June 2024)**

**Faculty Achievement**



Department of Materials Science and Engineering

Prof CHAN Chin Yiu and his team have developed highly stable and efficient pure-green organic light-emitting diodes (OLEDs) for ultra-high-definition displays. Their research was published in *Nature Communications* under the title Bright, efficient, and stable pure-green hyperfluorescent organic light-emitting diodes by judicious molecular design. These OLEDs exhibit exceptional performance, including maximum external quantum efficiencies exceeding 25%, maximum luminance of over 105 cd/m<sup>2</sup>, suppressed efficiency rollofts, and long device stabilities lasting approximately 600 hours.

**Faculty Achievement**



Department of Computer Science

Prof HUANG Hejing and a team of scholars from a local university have received the ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2024 Best Paper Award for their research paper titled GIANTSAN: Efficient Memory Sanitization with Segment Folding. Their paper introduces a new approach that significantly reduces the querying complexity of the widely-utilised runtime vulnerability detection tool, sanitiser.

**Faculty Achievement**



Department of Architecture and Civil Engineering

Prof Jeff WANG has been honoured with the Excellent Editorial Board Member Award in recognition of his outstanding performance as an Associate Editor of the *Journal of Rock Mechanics and Geotechnical Engineering* in 2023.

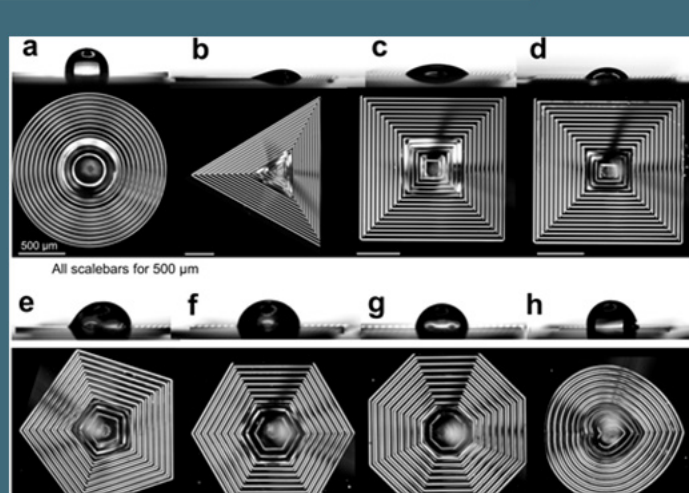
**Faculty Achievement**



Department of Mechanical Engineering

A project, named Zero-emission Droplet-based Nanogenerator for Air-based Water, Electricity, and Nutrient Harvesting, by Prof Steven WANG and Prof LI Wen-Jung, has been honoured with the "Research Project of the Year: STEM" accolade at the Times Higher Education (THE) Awards Asia 2024.

**Faculty Achievement**



Department of Materials Science and Engineering

Prof ZENG Xiaocheng and his team published a paper titled Topological wetting states of microdroplets on closed-loop structured surfaces: Breakdown of the Gibbs equation at the microscale in *The Proceedings of the National Academy of Sciences (PNAS)*. Their study developed specially textured surfaces with tiny walls and channels that allow them to adjust droplets' size, shape, and angle easily. Even on completely flat surfaces, these textured surfaces can make droplets appear to have angles greater than 130°. This challenges the traditional equations used to measure droplet angles and applies specifically to very small droplets.

**Faculty Achievement**



Department of Materials Science and Engineering

Prof ZENG Xiaocheng and his team have published a paper titled Unravelling the Fascinating Behavior of Water and Ice in Extreme Conditions in *Nature Physics*. They explored the behaviour of water and ice under high pressure, temperature, and confinement using advanced computational methods. Their simulations revealed unique phenomena, such as 2D ice-to-water melting, novel ice behaviour, water splitting, and proton dynamics in nano ice. These findings have significant implications for fields like planetary science, energy science, and nanofluidic engineering, providing insights into water's unusual properties in extreme environments.

**Faculty Achievement**



Department of Computer Science

Prof ZHAO Qingchuan and his research team, including two PhD students, Mr CHEN Yongliang and Mr TANG Ruoqin, and four fellow scholars, have received the Distinguished Paper Award at International Conference on Software Engineering 2024 in Lisbon, Portugal. Their paper, entitled Attention! Your Copied Data is Under Monitoring: A Systematic Study of Clipboard Usage in Android Apps, addresses security concerns related to insufficient access control on mobile operating system clipboards. The team developed ClipboardScope to uncover potential data exposure and identified a common privacy leakage channel involving the SharedPreferences object.

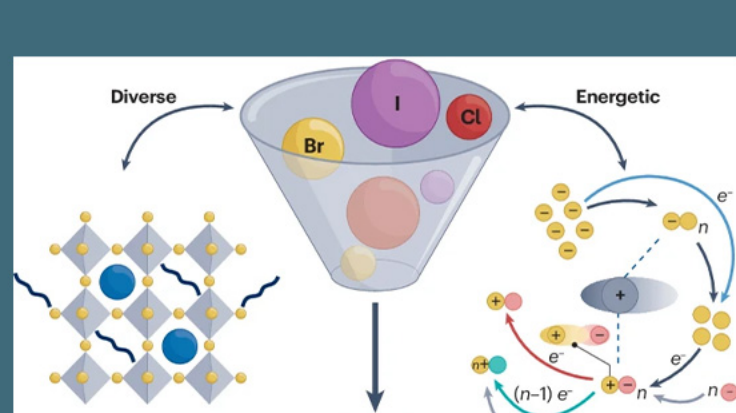
**Faculty Achievement**



Department of Materials Science and Engineering

Prof ZHI Chunyi and his research team have published a paper titled Surface Atom Knockout for Active Site Exposure of Alloy Catalyst in *The Proceedings of the National Academy of Sciences (PNAS)*. They have successfully developed a method to remove inactive atoms in catalysts, enabling precise control at the atomic level. By using an electricity-driven Cu atom knockout approach, they achieved superior catalytic performance for oxygen reduction reactions. Their work advances material synthesis and processing from the micro-/nano-level to the atomic level.

**Faculty Achievement**



Department of Materials Science and Engineering

Prof ZHI Chunyi and his team have published a paper titled Halogen-powered static conversion chemistry in *Nature Reviews Chemistry*, shedding light on the potential of halogen-powered static conversion batteries (HSCBs) in energy storage applications. Unlike traditional rocking-chair batteries, HSCBs utilise reversible changes in the chemical valence of halogens to transfer electrons in electrodes or electrolytes. The paper also discusses the challenges and opportunities for practical implementation of high-energy halogen cathodes in energy storage devices.

**Student Achievement**



Department of Computer Science

Prof Gerhard HANCKE, two PhD students, Mr Dutliff BOSHOFF and Mr Raphael NKROW, and a Postdoc, Dr Bruno SILVA, have been honoured with the Best Conference Paper Prize at the 25th IEEE International Conference on Industrial Technology for their paper titled Physical Layer Key Sharing for an Off-The-Shelf UWB Module. It explores the possibility of deriving shared symmetric keys from ultra-wideband radio channels on commonly used devices in industrial settings.

**Student Achievement**



Departments of Biomedical Engineering and Electrical Engineering

CityUHK's Underwater Robotics Team called PIONEER, supervised by Prof Rayn CHEUNG and Prof Pakpong CHIRARATTANANON, has been awarded the IEEE Oceanic Engineering Society Engineering Quality Award at the Singapore Autonomous Underwater Vehicle Challenge 2024. Their innovative design features an external electronic speed controller for cooling, separate development and testing dockers, and a visually appealing shark-fin-shaped magnetic kill switch. The competition saw participation from over 103 teams representing 20 countries.

