



Department of
MECHANICAL ENGINEERING
The University of Hong Kong

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RESEARCH

HKU engineering researchers develop revolutionary diamond fabrication technology



Professor Zhiqi Chu of the Department of Electrical & Electronic Engineering and Professor Yuan Lin of the Department of Mechanical Engineering led a research team and have developed a groundbreaking method for massively producing ultrathin and ultra-flexible diamond membranes. The research findings were recently published in Nature on December 18, 2024.

These ultrathin and ultra-flexible diamond membranes are compatible with existing semiconductor manufacturing technologies, and thus can, in principle, be fabricated into a variety of electronic, photonic, mechanical, acoustic, and quantum devices...[Read more](#)

HKU Scholars obtained lunar soil sample by Chang'e-6

Two scholars from HKU successfully obtained approval from the China National Space Administration's Lunar Exploration and Space Engineering Centre to study lunar soil samples. Professor Yang Lu from Department of Mechanical Engineering will be acquiring lunar soil samples collected by the Chinese lunar probe Chang'e-5. With a research focus on nanomechanics, Professor Lu aims to explore the potential of using lunar soil as construction materials. Additionally, he will investigate whether lunar soil contains semiconductor components, which are essential for the development of electronic devices...[Read more](#)

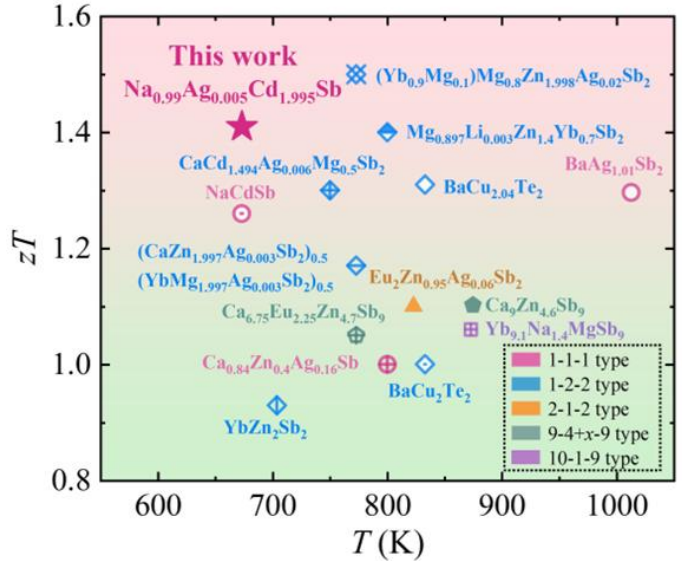
Temperature-responsive metamaterials made of highly sensitive thermostat metal strips

Professor Yang Lu and his collaborators used thermostat metal strips to create a novel temperature-responsive metamaterial with exceptional shape-morphing abilities. Achieving 70-80% of designed strain in just 5 seconds of heating, these mechanical metamaterials surpass others by exhibiting a thermal strain of around 30%. The research was published in Science Advances on Dec 4 2024... [Read more](#)



Realizing a High Thermoelectric Conversion Efficiency in Zintl-phase NaCdSb via Suppressing the Intrinsic Carrier Excitation

Professor Yue Chen of the Department of Mechanical Engineering and his collaborators worked on the research for the topic "Realizing a High Thermoelectric Conversion Efficiency in Zintl-phase NaCdSb via Suppressing the Intrinsic Carrier Excitation". The research findings were recently published in *Advanced Functional Materials* on December 8, 2024...[Read more](#)



"Grain boundaries are Brownian ratchets", a paper in Science

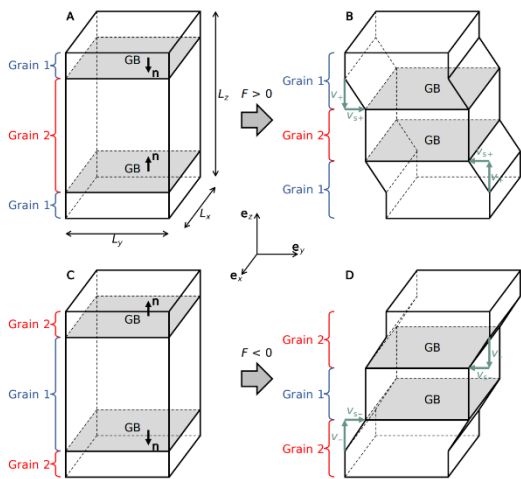
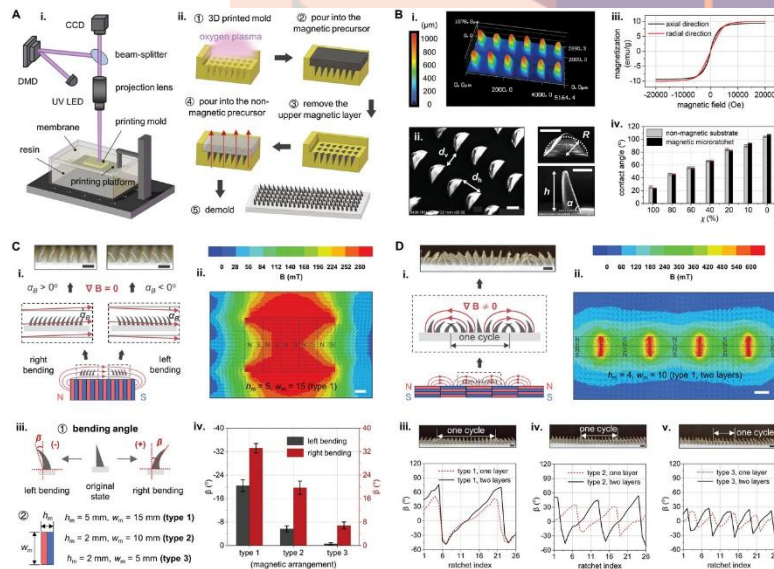


Fig. S1. Bicrystal model for MD and PFC simulations. Since PBCs are applied in all directions, the bicrystal contains two identical flat GBs. (A) and (B) show the shear-coupled GB migration under a positive driving force (the force is in the same direction as \mathbf{n}). (C) and (D) show the GB migration under a negative driving force (the force is opposite to \mathbf{n}).

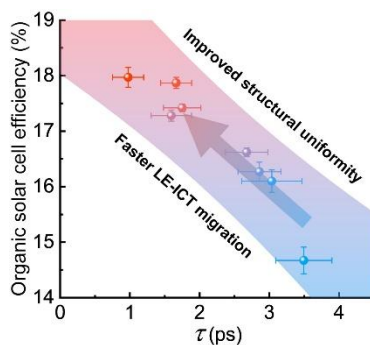
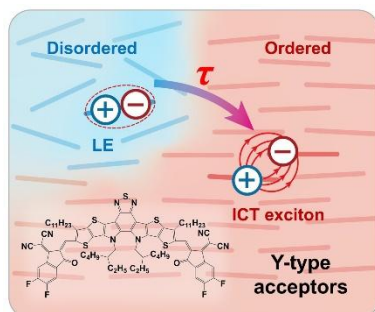
Professor David Srolovitz from the Department of Mechanical Engineering collaborated with scholars from Hong Kong, China, Germany and USA and worked on the research for the topic "Grain boundaries are Brownian ratchets". The research is published by *Science* on August 24, 2024...[Read more](#)

“Reconfigurable rectifiers for versatile 3D liquid manipulation”, a paper in Advanced Science

Professor Alan Cheng Hou Tsang of the Department of Mechanical Engineering and his student Jiaqi Miao have recently designed novel reconfigurable rectifiers with magnetized microratchets for liquid manipulation. The morphologies of the rectifiers can be reconfigured using programmed magnetic field to harness interfacial energy to control versatile liquid behaviors...[Read more](#)



Engineering ultrafast exciton dynamics to boost organic photovoltaic performance



Professor Philip C.Y. Chow from the Department of Mechanical Engineering and his PhD student Yu Guo have recently discovered that controlling the dynamics of photoexcited electrons on the sub-picosecond timescale can significantly enhance the performance of organic solar photovoltaic cells. The research is published by Energy & Environmental Science on October 14, 2024...[Read more](#)

AWARDS

Professor David Srolovitz won 2026 William Hume-Rothery Award by The Minerals, Metals & Materials Society

Congratulations to Professor David Srolovitz, Dean of Engineering and Professor of Mechanical Engineering, Chair of Materials Theory, is selected as recipient of the 2026 William Hume-Rothery Award... [Read more](#)



IETI PhD Fellowship Award

Miss Lin Lin, a graduated PhD student supervised by Prof. James Lam, has been awarded the 2024 3rd IETI PhD Fellowship Award for "outstanding contributions in finite-valued networks and intelligent control"...[Read more](#)

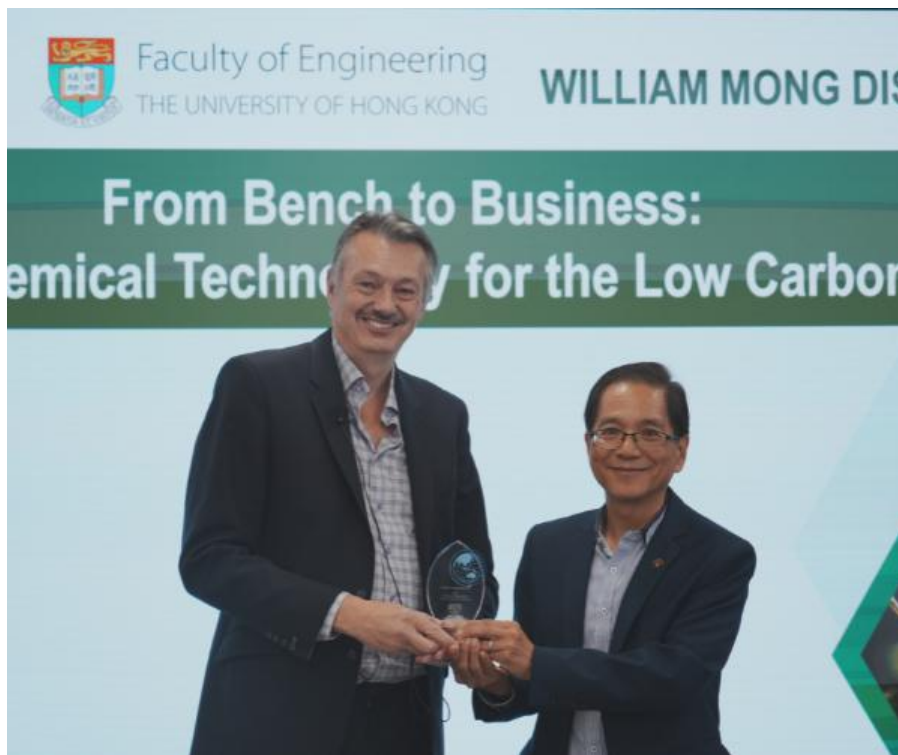
Celebrating Excellence at the 2024 HKIS Young Scientist Awards

We are delighted to share the outstanding achievements of Dr. Sarah Leong and Dr. Lin Lin, recent PhD graduates in Mechanical Engineering under the guidance of Professor Dennis Leung and Professor James Lam, respectively. These talented individuals have been recognized with prestigious awards at the 2024 Young Scientist Awards by the Hong Kong Institute of Science. Dr. Sarah Leong was the recipient of the 2024 Young Scientist Award, while Dr. Lin Lin was honoured with the Honourable Mention in Engineering Science. The awards were presented to them during the HKIS Annual Conference on December 7th, 2024...[Read more](#)



William Mong Distinguished Lecture: From Bench to Business: Innovations in Electrochemical technology for the Low Carbon Energy Transition

Professor Nigel Brandon OBE FEng FRS, Chair in Sustainable Development in Energy and Dean of Engineering at Imperial College London, delivered the William Mong Distinguished Lecture titled "From Bench to Business: Innovations in Electrochemical Technology for the Low Carbon Energy Transition" on November 12, 2024. The lecture was facilitated by Professor Dennis Leung of the Department of Mechanical Engineering...[Read more](#)



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