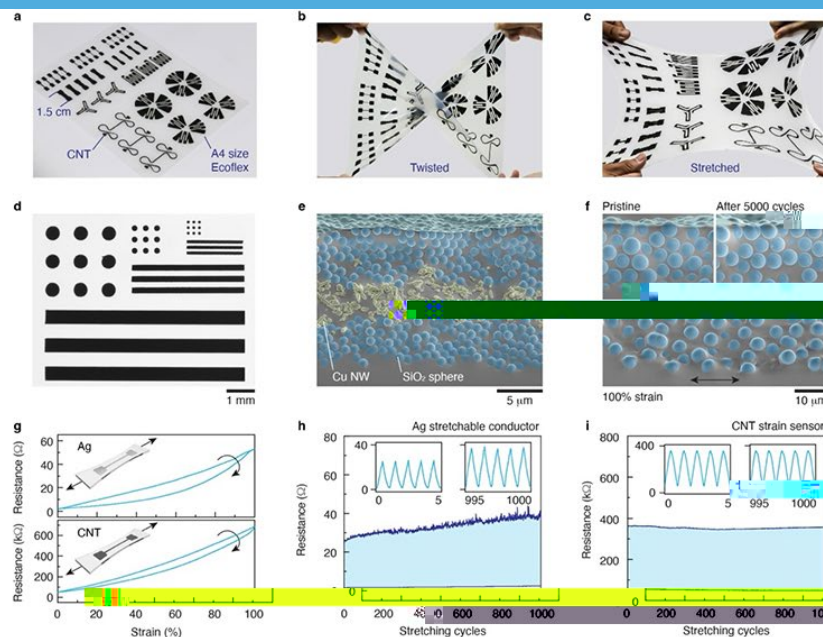




SCUT Newsletter



1. Particle Engulfment Printing Overcomes Longstanding Challenges: SCUT research group published new Soft Electronics Manufacturing Method in Nature electronics

Nature Electronics

A research group led by Professor Lin Rongzhou from the School of Mechanical and Automotive Engineering at South China University of Technology (SCUT), in collaboration with teams from the National University of Singapore and Rice University, has proposed a novel soft electronics manufacturing method termed "Particle Engulfment Printing." The study, titled "Soft Electronics Based on Particle Engulfment Printing," was published in Nature Electronics on January 2.

The particle engulfment printing simplifies the complexity of soft electronics manufacturing processes. It enables precise embedding of diverse functional materials, enhances functional integration and performance, and is applicable to various polymers and functional micro-nano materials.

The particle engulfment printing holds potential for integrating active materials to develop highly integrated flexible bioelectronic devices, thereby opening new research directions and technological pathways in the field of flexible electronics.

Engulfment Printing" 1 2 "Soft Electronics Based On Particle Nature Electronics

nature

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Article | Published: 08 January 2025

Li₂ZrF₆-based electrolytes for durable lithium metal batteries

Qingsheng Xu, Jiah Li, Zhijun Ju, Guangxu Chen, Daqi Ye, Geoffrey I. N. Waterhouse, Yijun
Guangmin Zhou, Lin Guo, Keyou Yan, Xirui Tang, Hong Li & Yongcai Qiu

Nature 637, 339–346 (2025) | Cite this article

Metrics

2. SCUT Researchers Report a Breakthrough in Lithium Metal Batteries in Nature

Nature

Following their groundbreaking study in inorganic perovskite tandem photovoltaics published in *Nature* in 2024, Professor Yan Keyou's research team at SCUT has achieved a major advancement in high-energy-density lithium metal batteries. Their research outcome has been published in the world's leading science journal *Nature* under the title "Li₂ZrF₆-Based Electrolytes for Durable Lithium Metal Batteries".

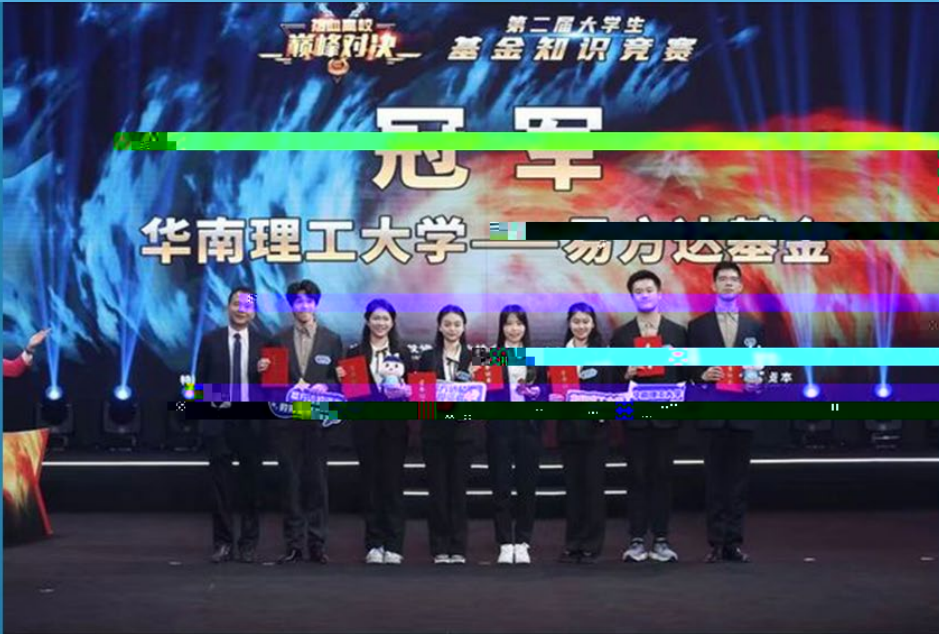
Lithium metal batteries are widely regarded as one of the most promising candidates for next-generation energy storage systems. However, the conventional carbonate-based electrolytes used in lithium-ion batteries remain fundamentally incompatible with lithium metal batteries. Consequently,

constructing an ideal solid electrolyte interphase at the lithium metal anode interface has consistently represented a critical challenge in this field of research.

To address this challenge, SCUT researchers have demonstrated the feasibility of using $t\text{-Li}_2\text{ZrF}_6$ crystals to construct an optimal solid electrolyte interphase. They proposed using an electric field to drive the phase transition from $m\text{-Li}_2\text{ZrF}_6$ to $t\text{-Li}_2\text{ZrF}_6$ for solid electrolyte interphase formation. Experimental results show that this approach not only leverages $t\text{-Li}_2\text{ZrF}_6$'s superior electron-insulating properties to prevent electron-induced breakdown of the solid electrolyte interface, thereby suppressing electrolyte decomposition, but also facilitates rapid Li^+ ion transport and thereby significantly enhances the rate capability of lithium metal batteries.

2024 Nature
"Li₂ZrF₆ based electrolytes for durable lithium metal batteries"

m-Li₂ZrF₆ t-Li₂ZrF₆ Li+



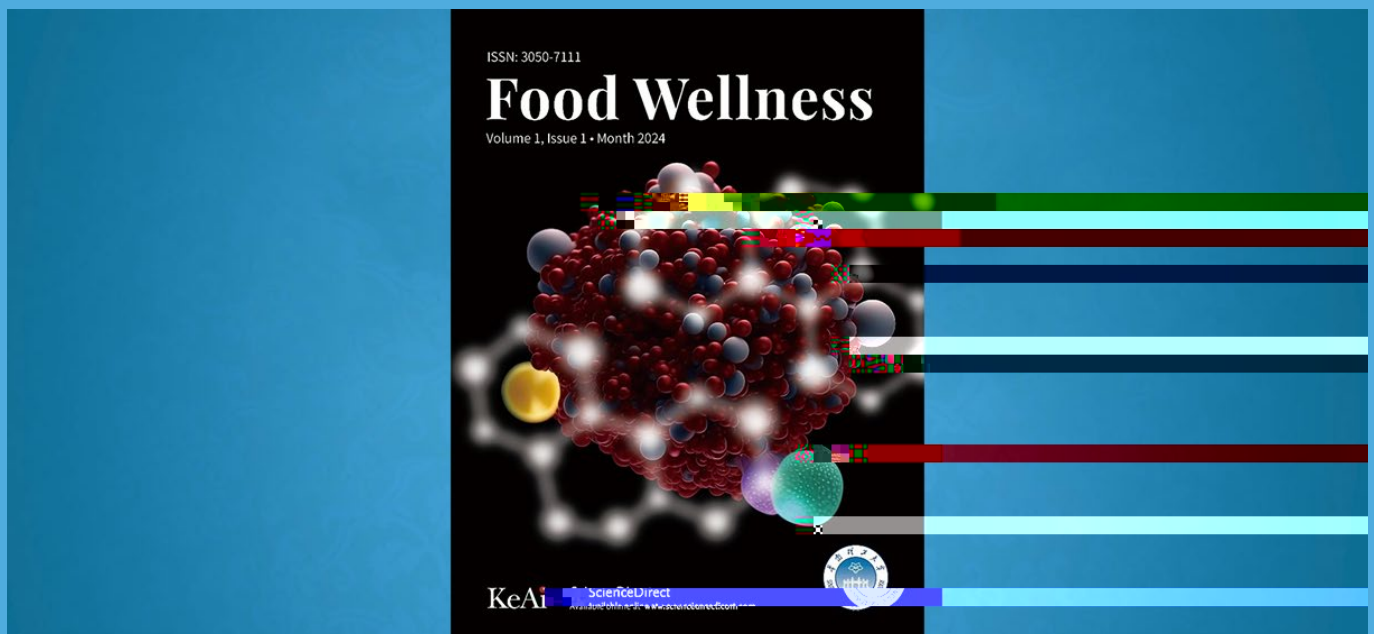
3. SCUT Crowns Champions in the Second National College Student Fund Knowledge Competition

The Second National College Student Fund Knowledge Competition (the "Competition") has successfully concluded, with the joint team from SCUT and E Fund Investor Education Base claiming

the national championship title.

SCUT fielded a team of six undergraduate students from diverse disciplines including Finance, Financial Technology, and Computer Science and Technology, which highlights the university's strengths in interdisciplinary integration. Through a pedagogy built on industry-academia synergy and industry-embedded education, the SCUT School of Economics and Finance offers fund investment courses co-designed with enterprises and incorporates diverse case studies and hands-on practice into the curriculum to foster students' analytical skills and decision-making abilities.

Guided by the Asset Management Association of China (AMAC) and organized by China Securities Journal, the Second Competition was part of AMAC's investor education initiative of the "One Company, One Province, One University" program of and the "Fund Industry in Action of Integration of Investor Education into the National Education System" campaign. The competition attracted participation from leading universities across China, including Peking University, Tsinghua University, and Renmin University of China.



4. SCUT Debuts Food Wellness Journal for Cross-Disciplinary Food & Wellness Research

Food Wellness

SCUT has recently launched *Food Wellness*, a new English-language academic journal published in partnership with KeAi and Elsevier. The quarterly journal will focus on food science and holistic

wellness, and publish cutting-edge findings from both fundamental and applied research in the interdisciplinary field. With its editorial office based at SCUT, *Food Wellness* is now inviting manuscript submissions globally for its inaugural issue.

The journal will direct attention to interdisciplinary applications of food science, biology, pharmaceuticals, materials science, chemical engineering, artificial intelligence, big data, and other disciplines in food wellness research, as well as their roles in advancing the future development of this field. Publications will span food science, food nutrition & health, intelligent food processing & food macromolecules, food biotechnology & synthetic biology, food biochemistry & biophysics, food biomaterials & bioinformatics, foodomics & big data, and other sub-disciplines. Particular emphasis will be given to cross-disciplinary studies exploring the food-wellness nexus.

	KeAi	Elsevier	Food
Wellness			

5. SCUT Research Findings Published in *Science*

Science

SCUT has achieved a strong start in scientific research with consecutive publications in *Science* in 2025.

Prof. Zhen Zhang from School of Emergent Soft Matter at SCUT recently published his study titled "Stereomicrostructure-Regulated Biodegradable Adhesives" in *Science*, reporting a series of high-performance adhesives developed by modulating the stereoregularity of P3HB. These environmentally friendly and bio-sourced alternatives demonstrate superior performance compared to the existing adhesives on the market while offering fully biodegradable solutions to replace current non-degradable adhesives.

Prof. Han Yu from the SCUT School of Emergent Soft Matter and Center for Electron Microscopy published his research findings in *Science* under the title of "Engineering Grain Boundaries in Monolayer Molybdenum Disulfide for Efficient Water-ion Separation". The study proposes an innovative strategy for efficient fabrication of sub-nanometer pores in 2D materials, which not only significantly enhances water/ion separation performance but also reveals a fascinating paradox that carefully engineered "defective" structures can achieve nearly "perfect" separation. Showing promising potential for broader applications in gas separation, catalysis, and functional membrane materials, this approach offers new technological solutions for sustainable development.

Both *Science* publications were accomplished through international collaborations, underscoring the pivotal role of global scientific partnerships in advancing cutting-edge research.

2025

Science

"Stereomicrostructure-regulated biodegradable adhesives"

Science

P3HB

"Engineering grain boundaries in monolayer molybdenum disulfide for efficient water-ion separation" Science

Science

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