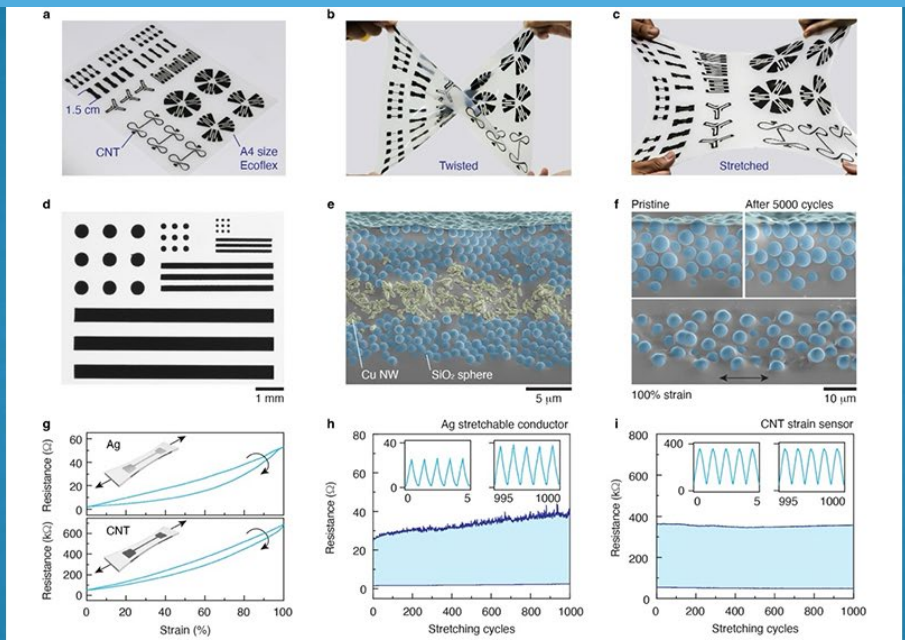
SOUTH CHINA UNIVERSITY OF TECHNOLOGY

ISSUE 1, 2025
2025年第一期

SCUT Newsletter 华工新闻快讯



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

粒子吞噬打印克服传统难题 华工团队在Nature Electronics发表软电子制造新方法

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.

华南理工大学机械与汽车工程学院林容周教授课题组与新加坡国立大学和莱斯大学等科研团队合作，提出了一种新的软电子制造方法——粒子吞噬打印。研究成果以"Soft Electronics Based On Particle Engulfment Printing"为题，于1月2日发表在《自然·电子》（Nature Electronics）上。

粒子吞噬打印简化了软电子制造工艺复杂度，能精确嵌入多种功能材料，提高功能集成度和性能，适用于多种聚合物与功能微纳米材料。

粒子吞噬打印有望整合活性材料，开发高度集成的柔性生物电子器件，为柔性电子领域开辟新的研究方向和技术路径。

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

再发Nature！ 华工学者在锂金属电池领域获重大进展

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 "Li_2ZrF_6-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-Li_2ZrF_6 crystals to construct an optimal solid electrolyte interphase. They proposed using an electric field to drive the phase transition from m-Li_2ZrF_6 to t-Li_2ZrF_6 for solid electrolyte interphase formation. Experimental results show that this approach not only leverages t-Li_2ZrF_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.

继2024年以无机钙钛矿叠层光伏领域实现突破发表Nature后，华南理工大学严克友教授团队在高能量密度锂金属电池领域又取得重大进展。研究以"Li2ZrF6 basedelectrolytes for durable lithium metal batteries"（六氟锆酸锂基耐用型锂金属电池）为题发表在国际顶尖学术期刊Nature上。

锂金属电池被认为是最有潜力的下一代电池候选者。然而目前，基于锂离子电池的碳酸酯基电解液体系，与锂金属电池仍然无法很好地兼容。因此，在锂金属负极界面表面构建理想型固态电解质界面，一直是这一研究中的关键难题。

针对以上难点，研究团队验证了以t-Li2ZrF6晶体构建理想型固态电解质界面的可行性，首次提出用电场驱动m-Li2ZrF6转化为t-Li2ZrF6来构筑固态电解质界面的策略。相关实验表明，这一策略不仅能够凭借优异的电子绝缘性阻止电子击穿固态电解质界面进而抑制电解液的分解，还能够为Li+ 提供快速迁移的通道，提高锂金属电池的倍率性能。

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

华南理工大学在第二届大学生基金知识竞赛中创佳绩

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.

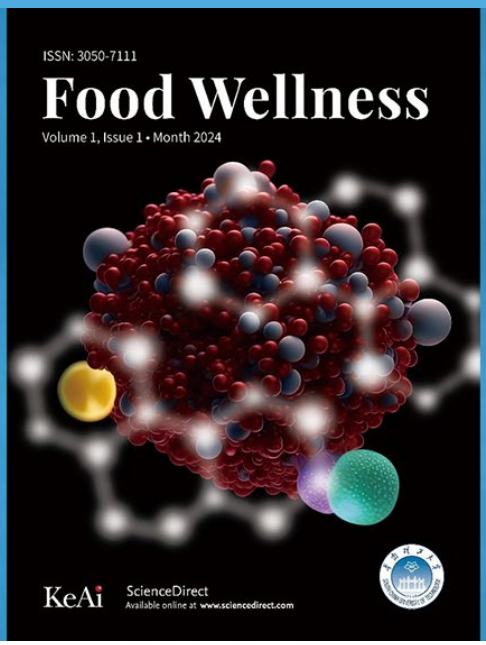
SCUT fielded a team of six undergraduate students from diverse disciplines including Finance, Financial Technology, and Computer Science and Technology, which highlights the university's strengths in interdisciplinary integration. Through a pedagogy built on industry-academia synergy and industry-embedded 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—the "One Company, One Province, One University" program— and the "Fund Industry in Action—Integratition 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.

第二届大学生基金知识竞赛落幕。由华南理工大学和易方达投教基地组成的参赛联队夺得全国总冠军。

华南理工大学本次派出来自金融学、金融科技、计算机科学与技术等专业六位本科生参赛，充分展现出多学科融合应用的优势。学校经济与金融学科秉持"校企合作、产教融合"的教学理念，开设了与基金投资相关的校企合作课程，通过丰富多样的案例分析与实践操作，着重培养学生的分析能力与决策技巧。

第二届大学生基金知识竞赛由中国证券投资基金业协会指导，中国证券报主办。大赛纳入中国证券投资基金业协会"一司一省一高校"投资者教育系列活动和"基金行业在行动——投教纳入国民教育体系"专项投教活动，大赛吸引了北京大学、清华大学、中国人民大学等众多国内顶级高校参与。



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

关注食品与大健康跨学科研究 华南理工主办学术期刊Food Wellness创刊

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.

近日，由华南理工大学与科爱（KeAi）和爱思唯尔（Elsevier）合作主办的英文学术期刊Food Wellness（《食品健康》）创刊，将聚焦食品与大健康领域，致力于报道基础与应用基础研究中产生的跨学科前沿成果。该期刊为季刊，编辑部设在华南理工大学，目前正面向全球征集首期稿件。

期刊将关注食品、生物、医药、材料、化工、人工智能与大数据等学科在食品健康研究中的交叉应用，以及这些研究对于推动食品健康研究未来发展的作用，涉及食品科学、食品营养与健康、食品智能加工与食物大分子、食品生物技术与合成生物学、食品生物化学与生物物理学、食品生物材料和生物信息学、食品组学与大数据等细分领域，尤其关注食品与大健康间关系的跨学科研究。

5.SCUT Research Findings Published in *Science*

开门红 华南理工大学科研成果在Science 正刊发表

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年，华南理工大学科研工作实现良好开局，连续在Science正刊上发表论文。

前沿软物质学院张震教授的研究成果以"Stereomicrostructure-regulated biodegradable adhesives"为题在Science正刊发表，通过改变P3HB的立体规整性报道了一系列性能优异的粘合剂，其相较于市售粘合剂具有强有力的竞争力，从而提供了一类环境友好的可生物质来源的粘合剂替代品，弥补了目前市售粘合剂不可降解的缺陷。

前沿软物质学院和电子显微中心韩宇教授以"Engineering grain boundaries in monolayer molybdenum disulfide for efficient water-ion separation"为题在Science正刊发表，该研究成果提出了一种高效构筑二维材料亚纳米级孔洞的新策略，不仅显著提升了水/离子分离性能，还揭示了一个有趣的悖论——通过精心设计的"缺陷"结构，可以实现近乎"完美"的水/离子分离。该策略有望拓展至更广泛的应用领域，如气体分离、催化及其他功能性膜材料，为可持续发展提供新的技术支撑。

两篇Science文章均以国际合作团队的形式完成，显示了国际合作在前沿科研领域中的重要性。

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Designer: JOYO Advertising
Issue Date：April，2025

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校对：Carol Jean Cline
设计：玖悠广告
发布时间：2025年4月