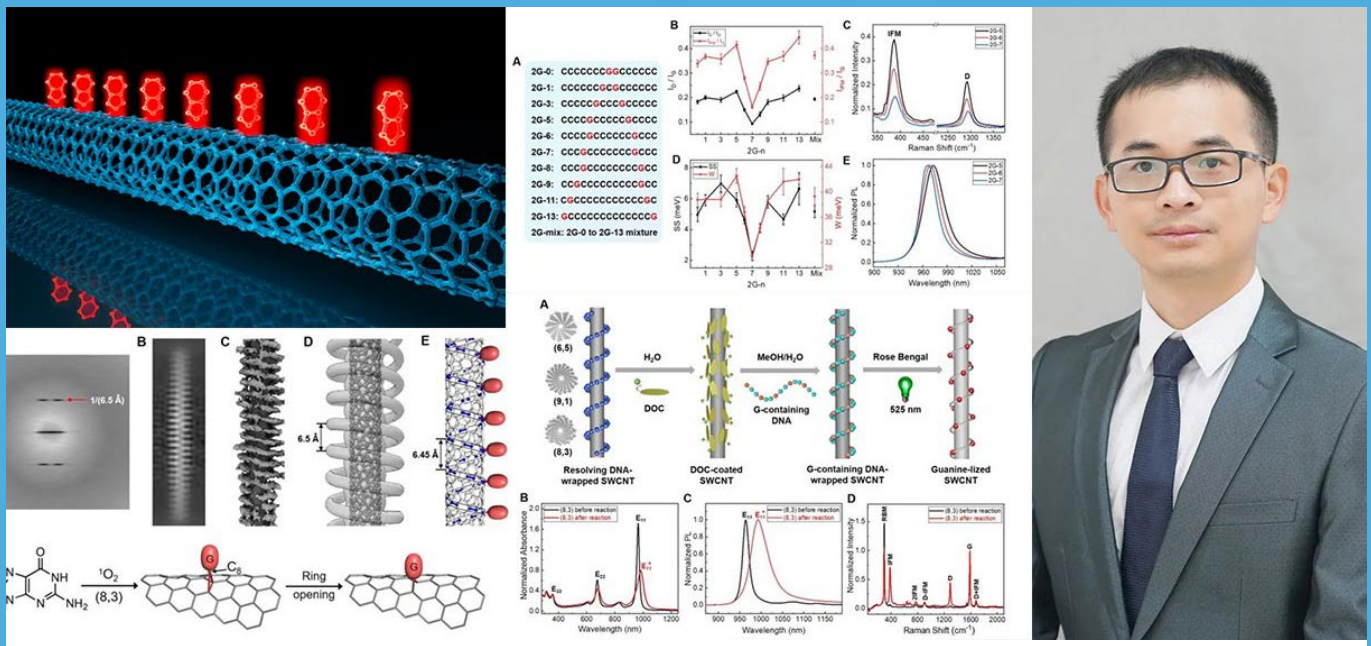
SOUTH CHINA UNIVERSITY OF TECHNOLOGY

ISSUE 3, 2022
2022年第三期

SCUT Newsletter 华工新闻快讯



1. SCUT professor Zhiwei Lin published collaborative research on DNA-guided lattice remodeling of carbon nanotubes in *Science*

利用DNA首次实现碳纳米管的可控有序修饰　华南理工林志伟教授合作成果登*Science*

On July 29, Zhiwei Lin, professor of School of Emergent Soft Matter, South China University of Technology (SCUT), and Ming Zheng, researcher of U.S. National Institute of Standards and Technology (NIST), collaborated to achieve controllable lattice remodeling of single-wall carbon nanotubes (SWCNTs) using DNA. Their research entitled "DNA-guided Lattice Remodeling of Carbon

Nanotubes" was published in ***Science***, one of the world's top academic journals.

7月29日，华南理工大学前沿软物质学院教授林志伟与美国国家标准与技术研究院（NIST）研究员郑铭，利用DNA首次实现了单壁碳纳米管（SWCNTs）的可控有序修饰。相关研究成果以"DNA-guided lattice remodeling of carbon nanotubes"为题，发表在国际顶级期刊***Science***上。

SWCNTs are one-dimensional tubular nanomaterials composed of single-layer carbon atoms, which have excellent optical, electrical, mechanical and thermal properties. SWCNTs have been widely used in electronic devices, optical instruments, disease detection and many other fields. The chemical modification of SWCNTs can engineer their lattices to achieve novel electrical and optical properties. This is of great significance for the development of new materials such as organic superconducting materials and quantum materials. However, there exists a major challenge in controlling reaction along the nanotube given the fact that carbon atoms on a SWCNT are chemically equivalent.

SWCNTs是由单层碳原子组成的一维管状纳米材料，具有优异的光学、电学、力学、热学等性能，被广泛应用于电子器件、光学仪器、疾病检测等诸多领域。SWCNTs的化学修饰可以改变其晶格结构，进而改变电学和光学性能，对发展新型材料如有机超导材料、量子材料意义重大，是国际前沿研究方向。但由于SWCNTs中所有碳原子的化学环境相同，其可控化学修饰是该领域长期存在的一项重大挑战。

Through simple DNA sequence design and precise structural characterization, this research has opened up a new path for controllable chemical modification of SWCNTs. "The precisely controlled modification method makes it possible for scientists to 'customize' the chemical structure of SWCNTs for novel properties such as superconductivity and quantum properties, so as to achieve cutting-edge applications in aerospace, quantum computers, quantum communications, new-generation biomedicine and other fields", Zhiwei Lin said.

该研究通过简单的DNA序列设计和精密的结构表征，为SWCNTs可控化学修饰开辟了一个全新思路。林志伟表示，“精确可控的SWCNTs修饰方法，使得科学家有望按自己的想法‘可定制化’地设计SWCNTs化学结构，以实现特殊的性能，例如超导性能和量子性能等，进而实现在航空航天、量子计算机、量子通信、新一代生物医疗等领域的前沿应用。”

2. SCUT intelligent car fleet achieves top position in the finals of the 17th National University Students Intelligent Car Race

华南理工智能车队在第十七届全国大学生智能汽车竞赛总决赛中喜获佳绩

On August 22, the finals of the 17th National University Students Intelligent Car Race were held in Nanjing. The competition, conducted both online and offline, attracted 2,181 teams from 363 colleges and universities across China. The intelligent car fleet from South China University of Technology sent eight teams for the competition, among which, the intelligent vision team, Baidu intelligent traffic team, electromagnetic four-wheel vehicle team, camera four-wheel vehicle team, aerospace logistics team and balanced beacon team won national first prizes, and the complete model team and iFLYTEK smart services team won the national second prizes. The intelligent vision team in particular won first place in the country.

8月22日，第十七届全国大学生智能汽车竞赛总决赛在南京举行。本届大赛吸引了来自全国363所高校2181支队伍参赛，比赛以线上、线下相结合的方式开展。华南理工大学智能车队8支代表队参赛，智能视觉组、百度智慧交通组、电磁四轮组、摄像头四轮组、航天物流组及平衡信标组获得全国一等奖，完全模型组和讯飞智慧服务组获得全国二等奖。其中，智能视觉组荣获全国第一名。

Firstly held in 2006, the National University Students Intelligent Car Race has attracted more than 400,000 students. It has become a highly influential and reputed class-A college student disciplinary contest. Guided by the philosophy of "cultivation, participation, exploration and excellence", it is a creative and multi-disciplinary S&T competition based on intelligent vehicles, and an exploratory and practical engineering activity among all college students across the province. It has functioned well in providing an effective platform to stimulate the interest and potential of university students in engineering and technology R&D and scientific research, and to prepare them with the capacity for applying knowledge in practice, seeking truth and working as a team.

全国大学生智能汽车竞赛自2006年创办至今累计参与学生超过40万人次，发展成为我国具有巨大影响力与知名度的A类大学生学科竞赛。以“立足培养、重在参与、鼓励探索、追求卓越”为指导思想，以智能汽车为竞赛平台的多学科专业交叉的创意性科技赛事，是面向全省大学生开展的具有探索性的工程实践活动，为激发大学生从事工程技术开发和科学研究探索的兴趣和潜能，培养大学生理论联系实际、求真务实的学风

和团队协作的人文精神提供了有效的平台。

3. SCUT School of Computer Science and Engineering wins the finals of the 4th National College Students Unmanned Vehicle Challenge Cup and Huawei Developer Competition

计算机学院参赛队获第四届全国大学生无人车挑战杯暨华为开发者大赛总决赛冠军

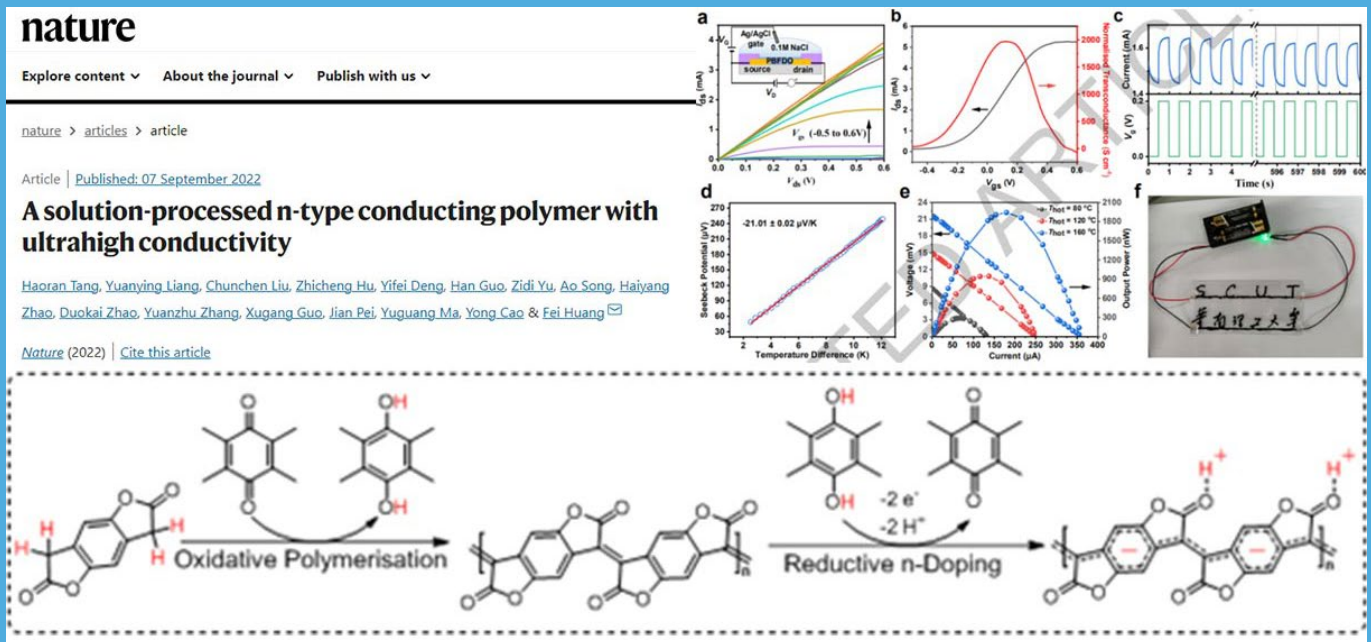
From August 23 to 27, themed on "prioritizing talent and development and pooling wisdom in Wujiang", the finals of the 4th National College Students Unmanned Vehicle Challenge Cup and Huawei Developer Competition were held in Wujiang, Jiangsu province. Beating powerful competitors and overcoming difficulties along the way, the B3351v3.0 team from SCUT School of Computer Science and Engineering won the finals and achieved a historical breakthrough.

8月23日至27日，"崇本英才　智汇吴江"第四届全国大学生无人车挑战杯暨华为开发者大赛总决赛在江苏吴江举行。华南理工大学计算机科学与工程学院B3351v3.0赛队一路过关斩将，夺得总决赛冠军，实现历史性突破。

Co-hosted by Wujinag Economic and Technological Development Zone, Suzhou, Huawei, and Shanghai Jiao Tong University, this well reputed national AI competition represents the joint efforts of governments, enterprises, and higher educational institutions. Since its first session in 2019, it has attracted more than 2,000 participants from over 200 colleges and universities both at home and abroad, including a total of 126 domestic and international teams from universities and colleges like Tsinghua University, Shanghai Jiao Tong University, Fudan University, University of Washington, and South China University of Technology. Based on ModelArts, Huawei Cloud's one-stop AI R&D platform, terminal-cloud synergy services, and unmanned car technologies, the competition is conducted both online and offline. By combining products with knowledge learning, and promoting the learning through the competition, it aims to prepare the participants with better capacity in delivering AI solutions and unmanned driving programs.

此次比赛是由苏州市吴江开发区与华为公司、上海交通大学三方合作，共同主办的政企教融合、面向全国的人工智能权威赛事。自2019年首届比赛以来，共吸引了海内外200多所高校的2000余人参赛，来自清华

大学、上海交通大学、复旦大学、华盛顿大学和华南理工大学在内的126支国内外高校队伍同台竞技。比赛基于华为云一站式人工智能开发平台ModelArts、端云协同服务和无人驾驶小车，通过"线上线下，产教结合，以赛促学"的形式，全面锻炼和提高参赛选手的AI解决方案能力及无人驾驶编程技巧。



4. SCUT State Key Laboratory of Luminescent Materials and Devices achieves important breakthroughs and publishes the results in Nature

华南理工大学发光材料与器件国家重点实验室取得重要突破 成果在Nature发表

On September 7, Prof. Huang Fei, Academician Cao Yong and Academician Ma Yuguang from South China University of Technology, Prof. Zhang Yuanzhu and Prof. Guo Xugang from Southern University of Science and Technology, and Prof. Pei Jian from Peking University published the article titled "A solution-processed n-type conducting polymer with ultrahigh conductivity" in Nature, which is considered to be a major breakthrough in the field of conductive polymers (CPs). Specifically, Dr. Tang Haoran from the SCUT State Key Laboratory of Luminescent Materials and Devices is the first author, Prof. Huang Fei is the corresponding author, and SCUT is the corresponding affiliation.

9月7日，华南理工大学黄飞教授、曹镛院士、马於光院士，南方科技大学张元竹教授、郭旭岗教授和北京大学裴坚教授等人在Nature上发表了文章"A solution-processed n-type conducting polymer with ultrahigh conductivity"，被认为是导电高分子研究领域取得的重大突破。其中，华南理工大学发光材料与器件国家重点实验室唐浩然博士为第一作者，黄飞教授为通讯作者，华南理工大学为通讯单位。

Currently, CPs have been widely used in solar cells, sensors and some display technologies. Most of the reported high-performance CPs, however, exhibit hole-dominant (p-type) transport behavior, while the development of n-type analogues lags far behind, typically limited by low doping efficiency and ambient instability. The team of Prof. Huang Fei presented a facilely synthesized highly conductive n-type polymer poly(benzodifurandione) (PBFDO). The resultant polymer exhibits a breakthrough conductivity with excellent stability and good solubility and solution-processability without extra side chains or surfactants through strong interactions with solvents. The benchmark performances in electrochemical transistors and thermoelectric generators are further demonstrated, thus paving the way for application of the n-type CPs in organic electronics. At present, the monomer high-purity

benzodifurandione used to prepare n-type CPs has been mass-produced and sold.

目前，导电聚合物已经在太阳能电池、传感器和一些显示技术中得到了十分广泛的应用。但已报道的绝大部分高性能导电聚合物展现出空穴占主导的传输特性（p型），而n型导电聚合物的发展远远落后，主要表现为掺杂效率较低以及稳定性较差两个方面。黄飞教授团队提出了一种将氧化聚合和还原掺杂相结合的方法，一锅法简易制备出高导电n型聚合物——聚(苯并二呋喃二酮)(PBFDO)。该聚合物具有创纪录的电导率，并且具有优异的空气稳定性，在无需额外的侧链或表面活性剂的情况下可以通过与溶剂的强相互作用实现良好的溶解性和溶液加工性。该材料在n型有机电化学晶体管和热电发电机器件中展现出优异的性能，从而为这种n型导电高分子在有机电子学中的应用铺平了道路。目前，用于制备高导电率n型聚合物的单体高纯度苯并二呋喃二酮已在企业实现批量生产和销售。

5. SCUT students wins the special award in the 16th Siemens Cup China Intelligent Manufacturing Challenge competition (CIMC)

第十六届CIMC “西门子杯”中国智能制造挑战赛举行　华工学子斩获特等奖

On September 7, the finals of the 2022 16th Siemens Cup China Intelligent Manufacturing Challenge competition (CIMC) were held. In the "Intelligent Manufacturing Innovative R&D Category - Enterprises" section, 84 teams from universities across the country competed against each other. The SCUT team won the first place and was granted the special prize in the national finals.

9月7日，2022年第十六届CIMC“西门子杯”中国智能制造挑战赛全国总决赛举行。在“智能制造创新研发类”赛项企业命题方向，来自全国高校的84支队伍参赛，华南理工大学参赛队伍取得企业命题赛道第一名，荣获全国总决赛特等奖。

Siemens Cup CIMC is a national A-level competition under the strategic framework for cooperation between the Ministry of Education and Siemens. It is jointly sponsored by the China Simulation Federation and Siemens Ltd. China, covering innovation, product R&D, engineering design, intelligent application and more in the field of intelligent manufacturing. It is an engineering competition aiming towards selecting and training technical and innovative talents required for the development of intelligent manufacturing.

“西门子杯”中国智能制造挑战赛是教育部与西门子公司战略合作框架下的一项国家级A类赛事，由中国仿真学会和西门子（中国）有限公司联合主办，方向涉及智能制造领域中的科技创新、产品研发、工程设计和智能应用等，是针对智能制造发展所需的技术及创新人才进行培养及选拔的工程类竞赛。

Produced by: International Office, SCUT

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Designer: JOYO Advertising

Issue Date：September，2022

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发布时间：2022年9月