South China University of Technology

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SCUT Newsletter 华工新闻快讯

1. Dialogue with the World to Foster Cultural Exchange: SCUT Holds the Second Global Summer School of Emerging Engineering

与世界对话　促文明交流　华南理工大学举办第二届新工科国际暑期学校

From July 6 to 19, South China University of Technology (SCUT) holds the Second Global Summer School of Emerging Engineering at its Guangzhou International Campus. This year's program saw a more than 50% increase in participation compared to the previous year, attracting 120 international students from 25 world-renowned universities, including the University of Cambridge, Imperial College London, Ghent University, Université Paris Cité, and the University of California, Irvine, along with 16 faculty members from partner institutions.

The program comprised three main components: academic courses, cultural courses and visits, and a corporate mobile classroom. The academic sessions were jointly delivered by faculty members from SCUT and its partner universities. The cultural courses and visits allowed students to experience the brilliance of traditional Chinese culture, particularly Lingnan culture. The corporate mobile classroom presented a vivid and technologically advanced modern China.

华南理工大学第二届新工科国际暑期学校于7月6日-19日在广州国际校区举办。本届新工科国际暑期学校参与人数较去年增长超50%，吸引了来自剑桥大学、帝国理工学院、根特大学、巴黎西岱大学、加州大学尔湾分校等25所世界知名高校120位国际学生以及16位合作高校的外方教师参与，内容包括学术课程、文化课程与参访、企业移动课堂三个部分。其中，学术课程由华南理工大学教师与合作伙伴高校教师共同授课，文化课程与参访引领学生领略璀璨生辉的中国传统文化、特别是岭南文化，企业移动课堂向学生呈现一个真实生动、科技发展的现代中国。

2. Nobel Chemistry Laureate Professor Ben L. Feringa Visits SCUT's "Linhong Forum"

诺贝尔化学奖得主Ben L. Feringa教授做客华南理工“麟鸿论坛”

On July 12, Nobel Prize in Chemistry laureate, Fellow of the Royal Netherlands Academy of Arts and Sciences, Foreign Member of the Chinese Academy of Sciences, and professor at the University of Groningen, Ben L. Feringa, visited South China University of Technology (SCUT) for the first time.

7月12日，诺贝尔化学奖得主、荷兰皇家科学院院士、中国科学院外籍院士、荷兰格罗宁根大学Ben L. Feringa教授首次到访华南理工大学。

SCUT President Tang Hongwu met with Professor Feringa and conferred upon him the title of Honorary Professor. During the forum, Professor Feringa delivered an academic report titled "The Art of Building Small", which focused on his team's groundbreaking research in molecular motors. He elaborated on the design and synthesis of artificial molecular motors and their applications in smart materials and light-responsive systems. The event attracted over 200 faculty and students from various disciplines, including materials science, chemical engineering, and light industry.

华南理工校长唐洪武会见Feringa教授并为其颁发荣誉教授证书。Feringa教授在"麟鸿论坛"作题为《构建微观世界的艺术》的学术报告。报告围绕其团队在分子马达领域的突破性研究展开，重点介绍了人工分子马达的设计、合成及其在智能材料、光控响应等领域的应用。现场200余名师生参与讨论，涵盖材料、化工、轻工等多个学科领域。

3. A New Precision Tool for Targeting Tumors: SCUT Team Makes Significant Progress in Cancer Immunotherapy

精准打击肿瘤新利器　华南理工团队在肿瘤免疫治疗领域取得重要研究进展

A research team led by Professor Wang Jun at South China University of Technology (SCUT) has published a paper titled "Engineering Multi-Specific Nano-Antibodies for Cancer Immunotherapy" in *Nature Biomedical Engineering*, reporting important research progress in the field of cancer immunotherapy. By developing multi-specific nano-antibodies and promoting their clinical translation and application, the team has provided new technological pathways and innovative concepts for the field.

华南理工大学王均教授团队以题为"Engineering Multi-specific Nano-antibodies for Cancer Immunotherapy"发表于*Nature Biomedical Engineering*。团队在肿瘤免疫治疗领域取得重要研究进展，通过研发纳米多特异性抗体，并持续推动其临床转化应用，为肿瘤免疫治疗领域的发展提供了新的技术路径与创新理念。

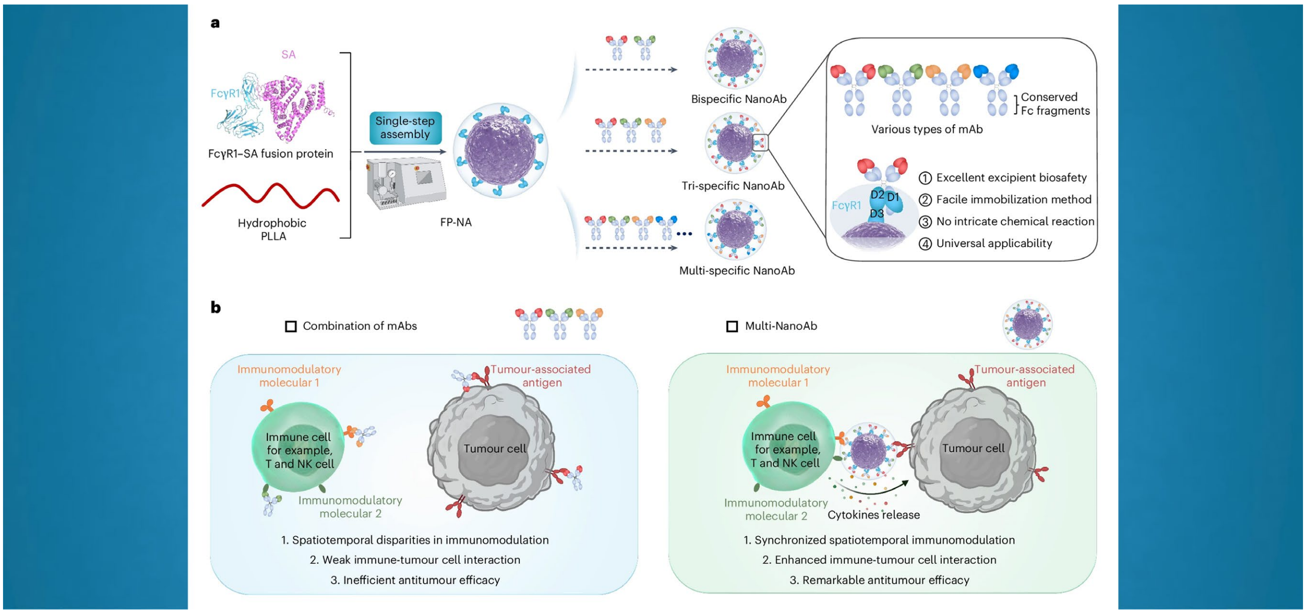


Figure 1: Schematic illustrating the design of FP-NA and multi-NanoAb with the potential to improve mAb-based cancer immunotherapy.

The team updated the "nano-adaptor" technology in the research. Using genetic engineering techniques, they constructed a recombinant fusion protein composed of an Fc receptor and serum albumin. This fusion protein was then controllably assembled with the biomedical polymer polylactic acid in a "one-step" method, resulting in the successful fabrication of a Fusion Protein–polymer

Composite "Nano-Adaptor" (FP-NA). This multi-specific nano-antibody significantly enhances the ability of immune cells, such as T cells and macrophages, to recognize and eliminate tumor cells. The team has completed the scaled-up trial production and key technology validation of the "nano-adaptor," which is expected to overcome the limitations of conventional production technologies, advance the development of new antibody drugs, and open new avenues for treating cancers and other diseases.

团队在研究中对"纳米适配子"技术进行了更新迭代，采用基因工程技术构建了由Fc受体与血清白蛋白组成的重组融合蛋白，并将其与生物医用高分子材料聚乳酸进行"一步法"可控组装，成功搭建了融合蛋白-聚合物复合型"纳米适配子"（FP-NA）。这种纳米多特异性抗体能显著增强T细胞、巨噬细胞等免疫细胞对肿瘤细胞的识别、杀伤能力。目前，团队已完成"纳米适配子"的放大试制及关键技术验证，有望突破传统生产技术的局限，推动新型抗体药物的研发，为肿瘤等疾病的治疗开辟新途径。

4.Professor Li Yuan's Team from South China University of Technology Reveals the "Aggregation-Induced Radical" Mechanism of the Classic "Donor-Acceptor" Type Organic Semiconductors

华南理工李远课题组揭示经典“给体-受体”型有机半导体的“聚集诱导自由基”机理

A collaborative research team led by Professor Li Yuan from South China University of Technology (SCUT), in partnership with the Changchun Institute of Applied Chemistry of the Chinese Academy of Sciences, the University of Science and Technology of China, and LONGi Green Energy Technology Co., Ltd., has published a paper in Science titled "Stable and Uniform Self-assembled Organic Diradical Molecules for Perovskite Photovoltaics." This study disclosed the open-shell "quinoid-diradical" electron spin ground state of the "donor-acceptor" self-assembled monolayer (SAM) material and elucidated the "structure-property" relationship between molecular conductivity and their "open-shell-diradical" electronic spin ground state.

华南理工大学李远研究员课题组与中国科学院长春应用化学研究所、中国科学技术大学、隆基绿能科技股份有限公司的合作研究成果以题为"Stable and Uniform Self-assembled Organic Diradical Molecules for Perovskite Photovoltaics"发表于Science。团队研究成果揭示了论文中的"给体-受体"自组装单分子层（SAM）材料的开壳"醌式-双自由基"电子自旋基态，及其分子导电性与"开壳-双自由基"电子自旋基态的"结构-性能"关系。

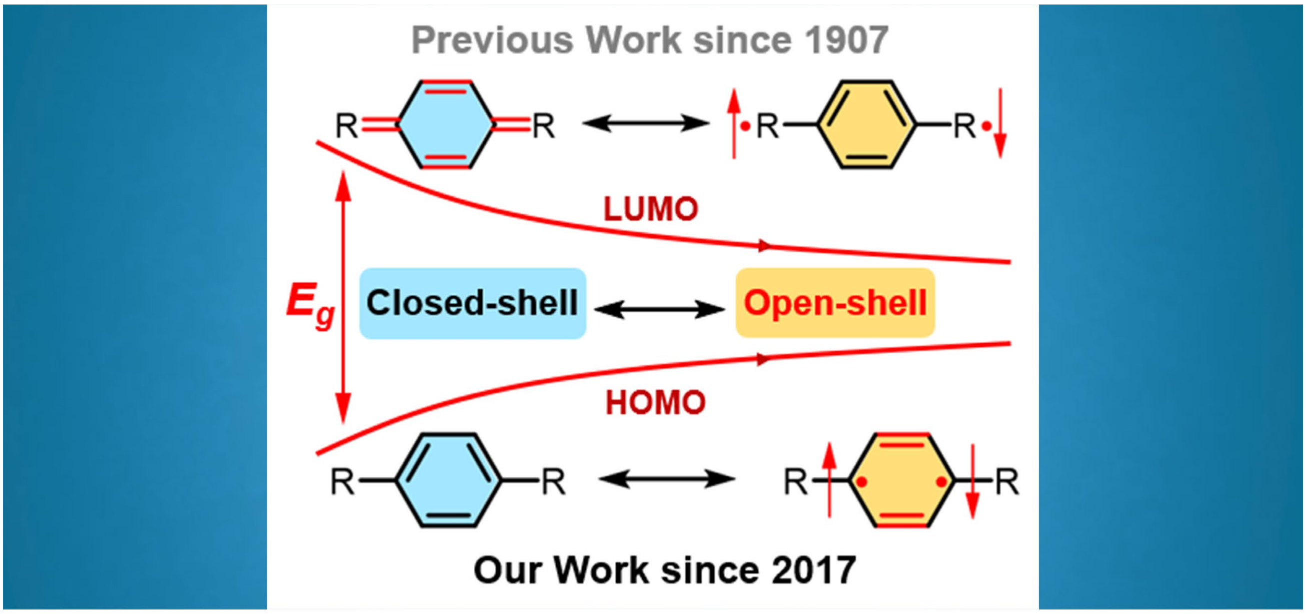


Figure 1: The Chichibabin radical since 1907 and the "quinoid-diradical" proposed by Li Yuan's team in 2017

图1：1907年的Chichibabin自由基与2017年李远课题组提出的“醌式-双自由基”

In 2017, Professor Li Yuan's team published a paper titled "A Review on the Origin of Synthetic Metal Radical: Singlet Open-shell Radical Ground State?" in *The Journal of Physical Chemistry C* the American Chemical Society (Fig. 1: J. Phys. Chem. C 2017, 121, 15, 8579-8588), in which Professor Yuan Li boldly and imaginatively reviewed the "closed-shell-singlet ground state" of classic "donor-acceptor" organic semiconductors. The current research findings further validate the open-shell "quinoid-diradical" electron spin ground state and the "aggregation-induced radical" mechanism initially proposed by Yuan Li's team in 2017. This work provides an example of industry-academia-research collaboration in the application of "donor-acceptor" diradical materials and demonstrates the application potential of organic "donor-acceptor" diradicals.

2017年，李远课题组于美国化学会*Journal of Physical Chemistry C*发表题为"A Review on the Origin of Synthetic Metal Radical: Singlet Open-shell Radical Ground State?"的研究论文（图1：J. Phys. Chem. C 2017, 121, 15, 8579-8588），对经典"给体-受体"型有机半导体的"闭壳-单线态基态"提出了大胆而极富想象力的质疑。本次研究成果进一步验证了李远课题组2017年提出的开壳"醌式-双自由基"电子自旋基态和"聚集诱导自由基"机理，为"给体-受体"型双自由基材料的应用提供了科研院校与企业合作研发的范例，展示了有机"给体-受体"型双自由基的应用潜力。

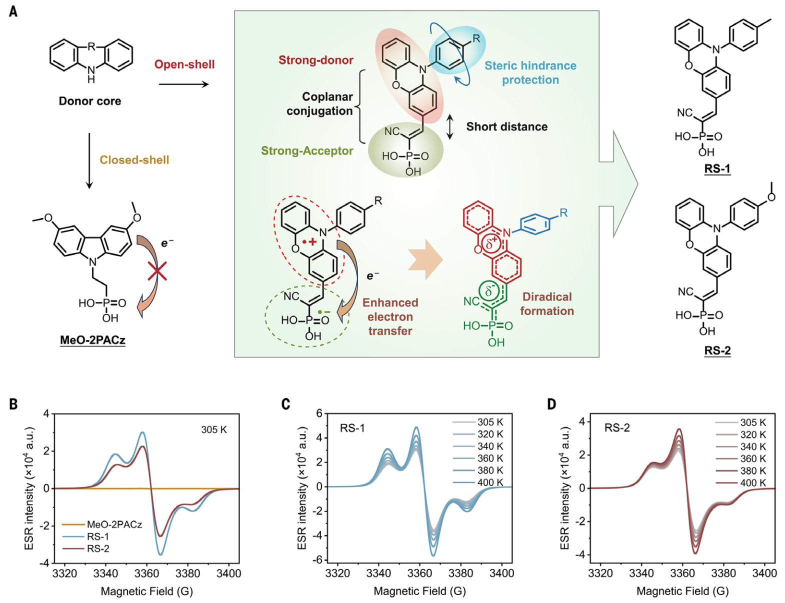


Figure 2. Design strategy for the "donor-acceptor" diradical self-assembled molecules and their corresponding electron spin resonance spectra.

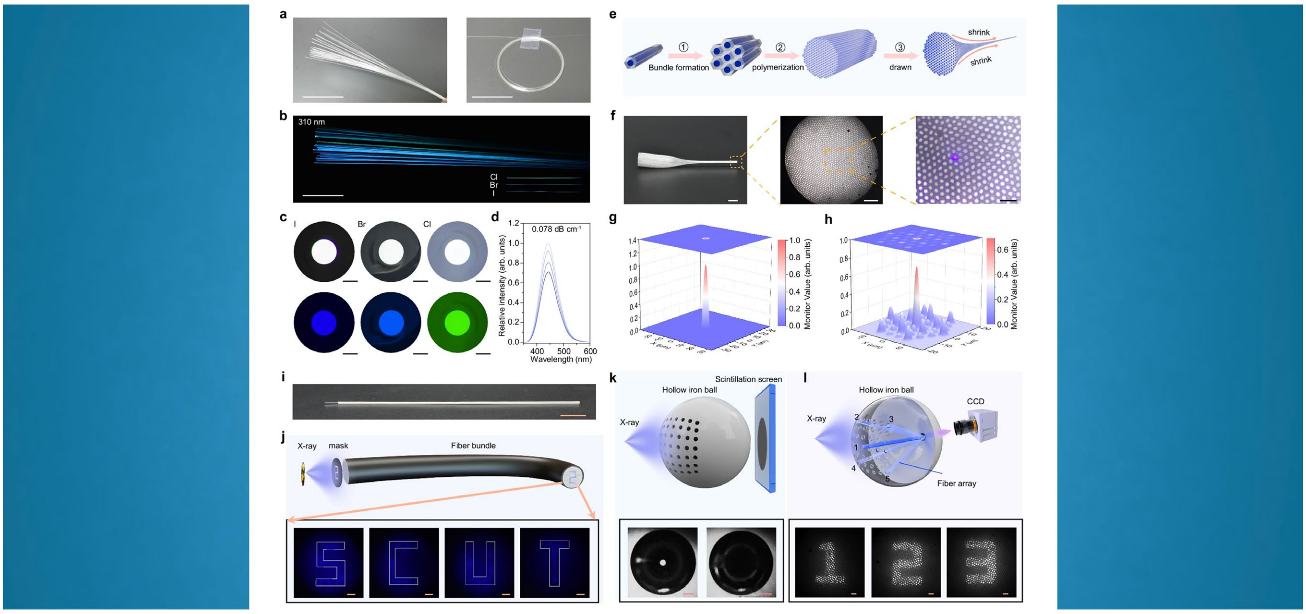
图2：“给体-受体”型双自由基自组装分子的设计思路与电子自旋共振谱图

5.SCUT Team Develops Novel Scintillating Fiber Array for Remote, High-Resolution X-ray Imaging Transmission

华南理工团队开发新型闪烁光纤阵列　实现远程、高分辨率X射线成像传输

A team led by Professor Dong Guoping from South China University of Technology (SCUT) has published a paper titled "Integrated Copper-halide Activated Scintillator Fiber Array for Remote High Resolution X-ray Imaging" in Nature Communications. The team developed a novel scintillating fiber array by incorporating nanocrystals into glass fibers. Through precise control of the crystallization process, they fabricated low-loss fibers and subsequently produced a fiber array with 1600 pixels using a secondary drawing method. This fiber array detector can penetrate complex structures, enabling low-dose (22 nGyair s-1), high-resolution (48 lp mm-1) X-ray imaging and image transmission.

华南理工大学董国平教授团队以题为"Integrated Copper-halide Activated Scintillator Fiber Array for Remote High Resolution X-ray Imaging"发表于Nature Communications。团队开发了一种新型闪烁光纤阵列：即将纳米晶体复合进玻璃光纤中，通过精确控制结晶过程，制备出低损耗光纤，并通过二次复拉方法制备出具有1600个像素的光纤阵列。该光纤阵列探测器能穿透复杂结构，实现低剂量（22 nGyair s-1）、高分辨率(48 lp mm-1)的X射线成像与传像。



图释：Cs3Cu2X5 NC glass fiber arrays for remote pixel-point imaging

This research not only successfully demonstrated the exceptional performance of the novel scintillating fiber array in a laboratory environment but also paved the way for its future mass production and broad application. This scintillating fiber array integrated with halide nanocrystals is expected to become a new tool in key areas such as precision radiation therapy, brain activity monitoring, and industrial 3D X-ray computed tomography, providing strong impetus for the innovation of high-resolution X-ray imaging technology.

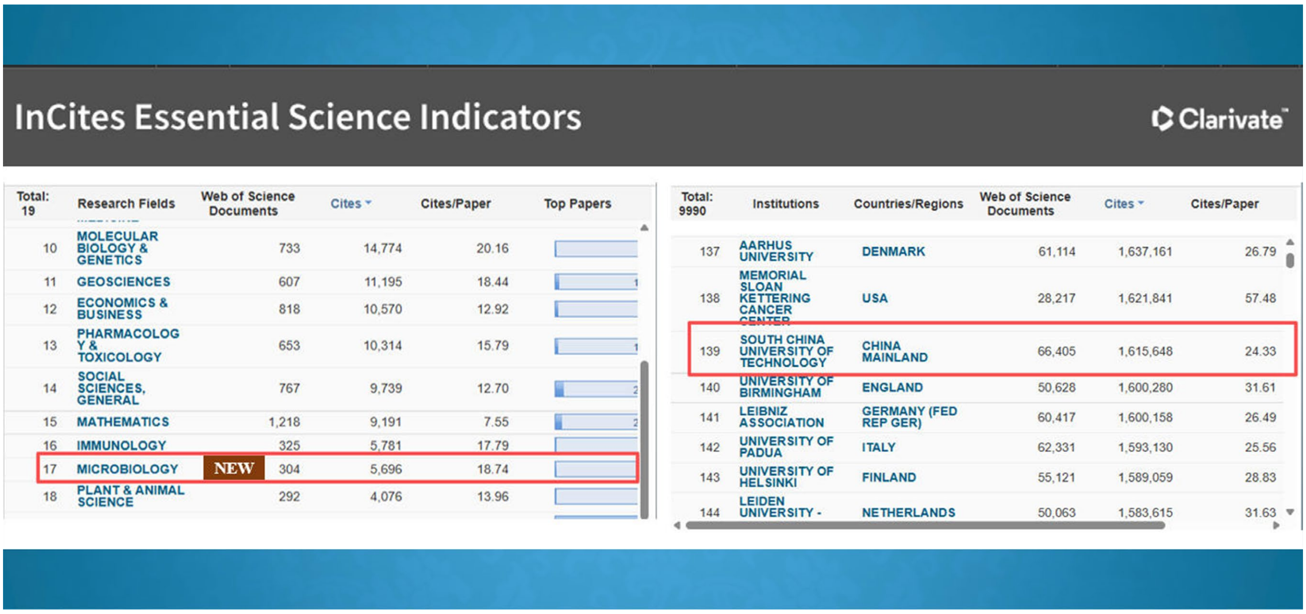
本项研究不仅在实验室环境中成功验证了新型闪烁光纤阵列的卓越性能，更为其未来的规模化生产和广泛应用开辟了道路。这种集成了卤化物纳米晶的闪烁光纤阵列有望成为精细放射治疗、脑神经活动监测以及工业三维X射线断层扫描等关键领域的新型工具，为高分辨率X射线成像技术的革新带来强劲动力。

6.Microbiology Enters the ESI Top 1%, Raising SCUT's Total ESI Top Disciplines to 18

微生物学跻身ESI学科前1%　华南理工大学ESI学科增至18个

On September 11th, Clarivate Analytics released the latest statistical data from the Essential Science Indicators (ESI) database. Microbiology at South China University of Technology (SCUT) has entered the global top 1% in ESI rankings for the first time. Currently, SCUT's global overall ranking stands at 139th, rising 29 places compared with the same period in 2024.

9月11日，科睿唯安公布了基本科学指标数据库（Essential Science Indicators，简称ESI）最新统计数据，华南理工大学微生物学首次进入ESI世界排名前1%。目前，华南理工全球总体排名位列第139位，较2024年同期提升29位。



InCites Essential Science Indicators

Clarivate

Total: 19	Research Fields	Web of Science Documents	Cites	Cites/Paper	Top Papers
10	MOLECULAR BIOLOGY & GENETICS	733	14,774	20.16	
11	GEOSCIENCES	607	11,195	18.44	1
12	ECONOMICS & BUSINESS	818	10,570	12.92	
13	PHARMACOLOGY & TOXICOLOGY	653	10,314	15.79	1
14	SOCIAL SCIENCES, GENERAL	767	9,739	12.70	2
15	MATHEMATICS	1,218	9,191	7.55	2
16	IMMUNOLOGY	325	5,781	17.79	
17	MICROBIOLOGY NEW	304	5,696	18.74	
18	PLANT & ANIMAL SCIENCE	292	4,076	13.96	

Total: 9990	Institutions	Countries/Regions	Web of Science Documents	Cites	Cites/Paper
137	AARHUS UNIVERSITY	DENMARK	61,114	1,637,161	26.79
138	MEMORIAL SLOAN KETTERING CANCER CENTER	USA	28,217	1,621,841	57.48
139	SOUTH CHINA UNIVERSITY OF TECHNOLOGY	CHINA MAINLAND	66,405	1,615,648	24.33
140	UNIVERSITY OF BIRMINGHAM	ENGLAND	50,628	1,600,280	31.61
141	LEIBNIZ ASSOCIATION	GERMANY (FED REP GER)	60,417	1,600,158	26.49
142	UNIVERSITY OF PADUA	ITALY	62,331	1,593,130	25.56
143	UNIVERSITY OF HELSINKI	FINLAND	55,121	1,589,059	28.83
144	LEIDEN UNIVERSITY -	NETHERLANDS	50,063	1,583,615	31.63

ESI is an analytical tool for evaluating scientific research performance and tracking trends in science. Disciplines ranked within the top 1% are considered high-performing, the top 1‰ are outstanding, and the top 0.01% are leading. SCUT currently has a total of 18 disciplines ranked among the global top 1% in ESI, including five in the top 1‰, and two in the top 0.01%.

ESI是衡量科学研究水平、跟踪科学发展趋势的分析评价工具，进入前百分之一的学科为优秀，前千分之一的学科为卓越，前万分之一的学科为领先。目前，华南理工大学共有18个学科进入ESI前百分之一，其中5个学科进入ESI前千分之一，2个学科进入ESI前万分之一。

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