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Nature发表题为“An eye on the prize”的文章对天津大学材料学院进行报道

媒体报道

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本站讯（通讯员 孙慧超）2019年3月20日，Nature在其官方网站发表了题目为“An eye on the prize”的文章对天津大学材料学院进行了报道。

The screenshot shows the header of the Nature.com website with the URL 'nature.com'. Below it, the title 'An eye on the prize' is displayed. The main content area discusses the School of Materials Science and Engineering at Tianjin University, mentioning its history and research in energy, biomedicine, and manufacturing. It also features a photograph of a friction stir welding machine used for underwater pipeline repair.

文章从材料学院的发展历史、学科方向、科研概况等方面对学院进行了简要的介绍，对生物医用水凝胶、金属基复合材料、现代连接技术等科学研究方向以及师昌绪荣誉学位计划给予了高度的评价。



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SPOTLIGHT ON MATERIALS SCIENCE IN CHINA

An eye on the prize

TIANJIN UNIVERSITY'S SCHOOL OF MATERIALS SCIENCE AND ENGINEERING

one of China's earliest, is quickly gaining a new lease of life with exciting research with applications in energy, biomedicine, and manufacturing on all scales.

Tianjin University, which evolved from Peking University, China's first modern university established in 1895, launched one of China's earliest and most complete material science programmes in 1985. The university established the School of Materials Science and Engineering (SMSE) in 1997, covering research in metals, ceramics, polymers, functional materials, and welding. Its materials have applications in biomedicine, energy, engineering, manufacturing, and many other industries.

Hengqin research institutes and several key laboratories, Tianjin University SMSE is rapidly building its strengths. Its material science and engineering programme is now ranked in the global top 0.1%, according to Essential Science Indicators (ESI) subject area ranking. In the four years from 2015 to 2018, the school's research budget reached 370 million RMB, with an annual research budget of about 1 million RMB per person. Faculty members increased from 88 in 2014 to 127 now, including 60 professors and 22 receiving national talent plan support. Researchers have published more than 400 academic papers and received funding for more than 30 national grants per year. This school has also been successful technology transfers of its research, with 136 granted patents in 2018 alone.

An injectable hydrogel which repairs bone and cartilage in animals; replacement of the vitreous body in a rabbit eye;

is just one of the impressive breakthroughs at SMSE. The gel was developed by SMSE's biomaterial scientists, who introduced multiple hydrogen bonds of amino acid into the side chains of polymers' to produce supramolecular polymer hydrogel. By controlling the concentration of hydrogen bonds, they produced reversible gel with a range of mechanical properties, from high strength, robust hydrogels, to soft, injectable self-dissolving ones. Their simple new method has also been used in *in-situ* breast cancer treatment and post-operation reconstruction.

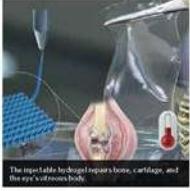
Another example is SMSE's work on metal matrix composites (MMCs), which are widely used in aviation, space, electronics and the automobile industry. A stumbling block in their development is that, while using a particulate or fibre increases the strength, it often degrades the toughness of the MMCs. SMSE scientists have created a new, three-dimensional reinforcement with graphene nanobeamers for MMCs, using a combination of chemical vapour deposition and powder metallurgy techniques. Their technology will lead to next-generation, strong and tough MMCs.

At SMSE's Institute of Welding and Advanced Manufacturing Technology, researchers are working on cutting-edge technologies with great lucrative potential. Their projects include third-generation high-density semiconductor package process, underwater welding repair of pipelines, and fabrication of structural integrity for large engineering structures. These technologies are critical for China's major development effort in offshore oil and gas exploration, ultra-supercritical electric power plants, and building of tunnel shield machine systems.

In education, SMSE initiated an honours degree plan named after the renowned Chinese material scientist, Shi Changxiong. This novel mentoring programme allows undergraduates to select mentors and courses based on their interests, to encourage personalised training that suits students' capabilities, enhancing their all-round skills and seeking excellence. SMSE is also home to the National Experimental Teaching Demonstration Center for material science and engineering. ■

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Tianjin University SMSE is equipped with a spherical apparatus, often used in research on materials science.


The injectable hydrogel can repair bone, cartilage, and the eye's vitreous body.


The robotic arm, using a robotic endotracheal tube, can be used for underwater pipeline repair.

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天津大学材料学院是我国成立最早、学科方向最为齐全的材料类院系之一，天津大学材料科学领域是天津大学继工程领域之后第二个进入ESI全球前千分之一的学科同时也是首批“双一流”重点建设学科之一，近年来学院在教学改革、科技创新、人才培养、师资队伍建设、国际交流等方面取得了一系列重要进展。

文章链接：<https://www.nature.com/articles/d42473-019-00075-x>

(编辑 焦德芳 李瑞玲)

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