TAIPEI TECH POST

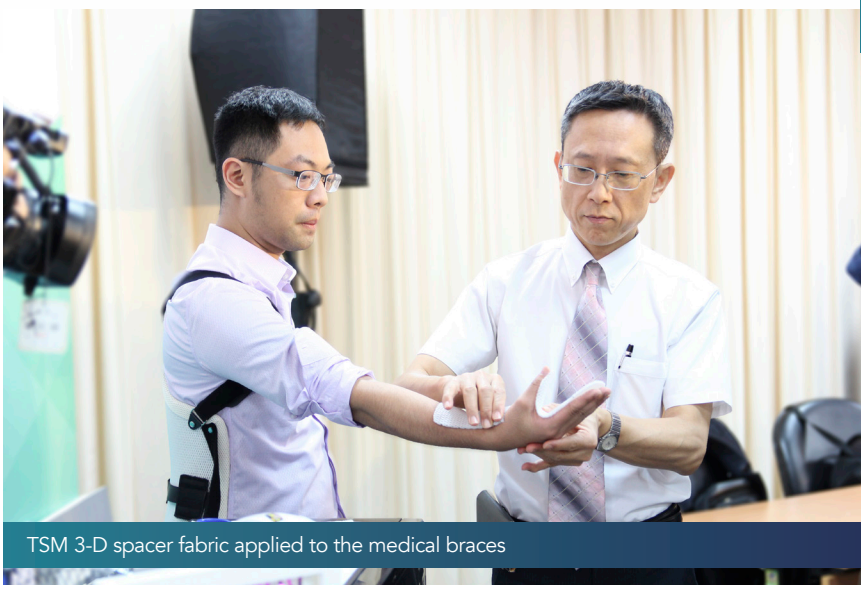
36
FEBRUARY
2019
BIMONTHLY NEWSLETTER

NATIONAL TAIPEI UNIVERSITY OF TECHNOLOGY

Publisher	Executive Editors	Editors	English Copy Editor
Sea-Fue Wang	Cherng-Yuh Su Ho-Chiao Chuang	Yun-Hua Yang Chia-Yu Hung Ying-Jhu Chen Jessie Lin	Sharin Shroeder Chia-Yu Hung

Visit Us

Revolutionary Malleable Fabric Composite Attracts USD$4M from Investors



TSM 3-D spacer fabric applied to the medical braces

The TRUST-U Program initiated by the Ministry of Science and Technology (MOST) has been encouraging academia to turn their research results into marketable products. One of its research teams that works on the development of smart 3D spacer fabric composite, led by Professor Rwei Syang-Peng of Taipei Tech, has been funded a total sum of four million USD by Mechema Chemicals International Corp., T&T Industries Corporation, and Taipei Tech Development Inc.

With these investments, the team successfully set up their company, "Taipei Smart Materials (TSM)" to develop light, breathable, and malleable composite products that have a bright outlook in the markets of medical equipment. TSM's innovative techniques and materials are considered the replacement for current medical plaster and metal braces, which are heavier and more expensive. Substantially empowered at its beginning phase, now TSM is ambitiously targeting the global market, estimated to be worth nearly three billion USD.

Substantially empowered at its beginning phase, now TSM is ambitiously targeting the global market, estimated to be worth nearly three billion USD

Since 2013, Rwei and his team have been receiving research grants from MOST for projects that have made significant progress in fabric coating technologies. In 2016, the team was recruited by MOST to expedite the commercialization of its research outcomes. With their unique techniques that are almost ready for the markets, the team successfully attracted investments from companies in the related industries.

Rwei pointed out that the current one-time-use plaster and braces are heavy and stifling. TSM's new 3D spacer fabric can be used to produce cheaper and lighter medical braces that are also more ventilatory and that can be shaped under low-temperature heating. These will provide cheaper and more mobile options for patients.

"We want to revitalize the startup and entrepreneurship ecosystem in academia through the TRUST-U program, as well as creating role models," said Chen Liang-gee, Minister of Science and Technology. "We have been running the program for nearly two years and are more than pleased to see many universities getting onboard by providing the environment to nurture academic startups, resulting in a handful of successful cases which have attracted investment from the private sector. MOST will keep encouraging these academic research teams to look beyond their labs and create useful products or services in order to cater to the actual needs of the society."

Smart Manufacturing Strategic Alliance Formed through Taipei Tech GLORIA

The Taipei Tech Global Research & Industry Alliance (GLORIA) entered into a strategic alliance with Walsin Technology Corporation (WTC) and the Institute for Information Industry (III)

The Taipei Tech Global Research & Industry Alliance (GLORIA) entered into a strategic alliance with Walsin Technology Corporation (WTC) and the Institute for Information Industry (III) on January 4. The memorandum of understanding for the strategic alliance was signed by Director Chiou Chyou-Huey, on behalf of Ministry of Science and Technology (MOST); President Wang Sea-Fue of Taipei Tech; Acting President Hsiao Po-Jen of III; and General Manager Gu Li-Jing, of WTC .

Fueling Businesses with University Research and Human Resources

The Taipei Tech GLORIA is a single platform that provides multidimensional services, bridging its researchers and industry members to the international markets and offering services in human resources and research and development. There are currently twenty-six members, three of whom are internal members with headquarters based outside of Taiwan. The platform is expected to benefit its members in three aspects: cultivating talent through hands-on training and internship; transforming and upgrading business models of current businesses; and consolidating and transferring university research results to members to capture new business opportunities.

"WTC is formed by alumni of Taipei Tech," said Wang, president of Taipei Tech. "They became a member of the Taipei Tech GLORIA in 2018. Its Malaysia branch PSA-Kamaya has also become an international member of the Taipei Tech GLORIA, receiving full benefits from its services.

Taipei Tech GLORIA is going to provide a series of services to WTC through this strategic alliance. The services include implementing smart technology in the production lines in WTC factories, providing training courses for WTC employees, and hosting a customized job fair on campus, hiring Malaysian students at Taipei Tech to work at WTC after they graduate.

WTC General Manager Gu Li-Jing pointed out that the company's current production capacity of passive component production is not enough to supply some six hundred international clients. Although PSA-Kamaya is relatively more automated compared to other WTC branches, the production capacity is still not enough. Gu hopes that, through working with Taipei Tech, WTC can gain access to top-quality employees and boost the production rate two to three fold by fully automating the production lines.

Making Production Lines Smarter through the ServBox

The Institute for Information Industry also demonstrated the ServBox at the ceremony. The ServBox is one of the smart-manufacturing machines that the Institute for Information Industry has been assisting in exporting through the Technology Development Program (TDP) in central Taiwan since 2008. The ServBox can now be found in more than three thousand smart-technology-enabled manufacturing machines around the world, especially in China and Mexico.

"The ServBox is a revolutionary devise that enables service-driven manufacturing," Hsiao, Institute for Information Industry acting president, said. "It is considered an effective way to improve relationships between factories and their customers by providing on-demand production capability that is managed through cloud computing."

Ting Chen-Ching, chair of Taipei Tech Mechanical and Mechatronic Engineering, indicated that Taipei Tech is now offering six courses through its smart industrial production teaching factory. Students can learn the complete set of techniques of servicing and managing production lines by interacting with industry lecturers. The program is now providing training for more than seventy businesses and consultancy service for more than forty factories.

"Taipei Tech smart factory best exemplifies an Industry 4.0 factory," Ting said, "in which all components of a production line automatically get assigned tasks as a new order comes in."

Ting further added that they are currently implementing the initiate Cyber-Physical System (CPS) in WTC's factory in Malaysia; it will take one to two years to upgrade the factory to full smart manufacturing.

Taipei Tech Finance Students to Intern at the HKEX

Faculty members and students of Taipei Tech Department of Information and Finance Management (IFM) visited the Hong Kong Exchanges and Clearing Limited (HKEX)

Faculty members and students of Taipei Tech Department of Information and Finance Management (IFM) visited the Hong Kong Exchanges and Clearing Limited (HKEX) in late December 2018 and formed an agreement for an internship program at the HKEX.

"Visiting HKEX enables our students to learn how the analysis of policies, financial figures, and statistics are actually conducted," said Dr. Chen Yu-Wei, chair of Taipei Tech IFM. "We are HKEX's first university visitors from Taiwan, and we have also secured internship opportunity for our students for the coming summer vacation."

HKEX is one of the leading stock trading platforms in the world, with a variety of items traded every day, including equities, ETFs, REITs, bonds, structured equity products, equity index and single stock derivatives, currency futures and commodity derivatives. It also provides a comprehensive range of real-time and historic data as a reference for investors.

Chen indicated that the FinTech Lab of Taipei Tech IFM updates its stock trading software each year in training students to become financial professionals. Taipei Tech IFM is also in talk with HKEX to establish a financial lab that focuses on the development and cooperation of big data, blockchain, and other cutting-edge financial technology. Moreover, HKEX vice president will also be invited to lecture at Taipei Tech, giving students first-hand experience of working in an international financial institute.

"With a high amount of financial activities and career opportunites with higher pay, compared to Taiwan, Hong Kong has long been attractive to many finance major graduates in Asia, or even worldwide," said Wu Chien-Wen, Taipei Tech IFM associate professor. "Taipei Tech IFM will work to improve the English proficiency and the international financial knowledge of students who would like to intern at the HKEX, and, most of all, to prepare students well for their future."

Innovative Projects Demonstrated at the 2018 Smart Automation Competition

2018 Taipei Tech and TBI Motion Smart Automation Competition

Taipei Tech and TBI Motion co-hosted the fourth annual competition on smart automation. Designed to bring university students up to date with the rapid development of smart manufacturing and automation in Industry 4.0, the competition offered NT$400,000 in prize money and drew students from all over Taiwan.

The smart automation competition received nine corporate sponsorships this year, including Shihlin Electric & Engineering Corporation, SESAME Motor Corp., Taiwan Chelic Co., Ltd., URA Engineering Co., Ltd., Mindman Industrial Co., Ltd., TOYO FA&ROBOT, HSK Co., Ltd., TPI Co., Ltd., and Kinik Company.

"Smart automation and engineering has been the Taiwan's highlighted industry, and Taipei Tech has also been focused on related research," Taipei Tech Vice President Jen Yi-Jun pointed out. "This competition, with involvement from our industry partners, is expected to inspire the participating students and bring about new ideas for the industry."

"Taiwan has a lot of businesses of varying sizes making components that are essential to smart manufacturing and automation. These businesses serve as the cornerstone for Taiwan to propel its automation industry," said Secretary-General Su Cherng-Yu of Taipei Tech. "This competition spurs the students' learning motives, and equips them with innovative and hands-on capabilities that are beneficial to the future smart automation industry."

Southern Taiwan University of Science and Technology's "ivision" team won the first place in this year's competition, bringing home a prize of NT$150,000. Led by their advisor Lin Horng-Horn and Su Chia-Hsiang, the "ivision" team members Huang Fu-Chiou, Hsieh Wei-Yu, and Lin Yen-Ru designed the "Interactive Smart Laser Processing Machine" to speed up the overall laser processing time. They achieved this goal by allowing an operator to directly capture an image or a pattern from any source and instructing the machine to make the laser engrave on any kind of material, all directly done through an interactive interface. This much more efficient processing was especially complimented by the judges and the audience; therefore "ivision" also won the "Most Popular" prize.

The second and third places were taken by the joint team from Fujen Catholic University and Lunghua University, led by Chiang Hsin-Han and Lee Lian-Wang. The project of the second-place winner "ASVT" is a stable solenoid valve that controls the direction of the fluid medium with the electromagnet. The project features high-precision movement, simple structure, speedy reaction, smaller size, lower cost, lower energy consumption, and better anti-interference mechanism than the conventional design. The third place winner "TAIDR" made an automatic UV-disinfection robot that completely sterilizes the seats in the long, narrow environments of mass transportation like train cars and airplane cabins, without giving off the pungent odor of sterilizers.

As TBI Motion Chairperson Lee Ching-Kun indicated, the projects this year are of higher quality and solve real life problems. Lu Yo-Chih, Director of Taichung City Economic Development Bureau, further pointed out that Taiwan has two limiting conditions when it comes to the development of industries—limited land and a relatively small population. Lu encouraged students to think systematically to come up with designs and solutions to overcome these problems.

"The projects this year demonstrate the students' creativity and inter-disciplinary capabilities. All of the projects adhere to the Industry 4.0 concept of tighter integration between hardware and software," commented Professor Liu De Shin from National Chung Cheng University, one of the judges, "It was difficult for me to decide which one is the best."

The champion team of the competition

Entrepreneurs Discuss FinTech and Smart Manufacturing Strategies amidst US-China Trade War

Taipei Tech International Academia-Industry Alliance (IAIA) and the Office of Industry-Academia Cooperation hosted a forum on Taiwan companies' strategies to deal with the U.S.-China trade war. Guest speakers, including AU Optronics Corporation (AUO) CEO Paul Peng, Elan Microelectronics Corporation chairman Yeh Yi-Hao, TOPCO chairman Kuo Jih-Hwei, and Microloops chairman Chao Yuan-Shan, addressed coping strategies from the different perspectives of trade, finance, and manufacturing industries.

"The U.S.-China trade war is a lesson in international trade that will cost Taiwan companies tens of billions of dollars," said Peng, AUO CEO. "This is mainly due to the fine of violating local regulations." The case in point is his own company violating US antitrust regulations when they entered the U.S. market. Peng suggested that Taiwanese companies should take heed of the local laws and regulations as they expand their business.

Yeh, Elan Microelectronics Corporation chairman, highlighted the challenges the IC design industry is facing. Since the trade war has indirectly prohibited the export of electronic components and raw materials from Taiwan to China, he indicated, based on the successful experiences of Elan Microelectronics, that the key to mitigate impact is to work with regulators of global standards in developing automation systems that can be easily adapted to new markets.

Kuo of TOPCO used The Art of War to analyze the trade war. In addition to the problem of separating supply chains for the Chinese and U.S. markets, Taiwanese companies will also encounter tariffs, geopolitical issues, and brand credibility issues. He suggested that entrepreneurs should focus on a single market and keep finding ways to manage risks by moving supply chains in southeast Asia and even globally.

Chao of Microloops opined that although the conflict between the U.S. and China appears to result from a trade imbalance, foreign exchange controls and, infringements of intellectual property rights on the surface, the conflict is actually rooted in the U.S. trying to maintain the dollar as the dominating currency. The manufacturing industries in Taiwan should move to become service-oriented manufacturers by providing better customer service and customization. He also suggested that the government should privatize and internationalize government-owned enterprises.

The guest speakers addressed coping strategies from the different perspectives of trade, finance, and manufacturing industries.

Wood, Craft, Home Exhibition Evokes Feelings of Bliss and Nostalgia

Built by stacking 10 wooden stools on top of each other, this wooden Christmas tree is one of the items on display at the Wood, Craft, Home exhibition

Christmas trees adorned with glittering lights bring happiness in December. This year, Taipei Tech has its own special Christmas tree. Built by stacking 10 wooden stools on top of each other, this wooden Christmas tree is one of the items on display at the Wood, Craft, Home exhibition (木・作・家), a joint exhibition on wooden furniture and decorations with items from Taipei Tech W. School and fourteen other universities that have woodworking-related degrees and courses.

"Wood, Craft, Home demonstrates the successful implementation of our hands-on, fac-tory-like laboratory, first in Taiwan's furniture manufacturing education," said Taipei Tech President Wang Sea-Fue. "Students have demonstrated their skills by making products such as the American-style bed sets and tall dressers that are displayed in this exhibition." The woodworking department was one of the original departments when Taipei Tech was founded in 1912, and Taipei Tech has established itself in recent years as the leading institute in training woodworking professionals.

The highlight of the exhibition is a Christmas tree constructed by stacking 101 "Stools of Happiness," stools designed and made by the team at Taipei Tech. According to Chen Tien-Li, chair of the Department of Industrial Design, the stool is a product of the hands-on vocational education offered at Taipei Tech.

"The warmness, comfort, and harmony of home are central to many of the designs in this exhibition," said Chen. "Many designs also incorporate elements special to the region where the schools are located." These designs include "Turtle Island Sunrise" by Fo Guang University, which was inspired by the famous view of Guishan's sunrise in Yilan, and "Powerful Mt. Ali" by students from National Chiayi University, which show the magnificent view of Mt. Ali through a collage of the elms.

Students from National Kaohsiung University of Science and Technology also showed university social responsibility by using recycled materials from a Taiwanese wood manufacturer in Vietnam to produce "Guaiacum Wood," as well as by working with the local community and students from Sanmin Vocational High School to produce "Em-broidery Ruler."

Taipei Tech W. School and fourteen other universities that have woodworking-related degrees and courses co-hosted the joint exhibition

USR of Taipei Tech to promote the agricultural commodities for small-holder farmers

The high-quality vegetables sold at the bazaar

The Facebook marketing page for the organic produce went online

The Yizhu team (literally "volunteering architects") of the Taipei Tech Department of Architecutre has recently assisted a group of aboriginal farmers in establishing a brand for their organic produce.

Located in the rather inaccesible mountain area of Jiangshi Township in Hsinchu, the farmers of the Shihlei Tribe have had difficulty to secure a way to sell their produce. The situation is worsened this year with the excess supply of cabbage.

The Yizhu team has been involved in constructing buildings that are tailored to aboriginal tribes since 2009. The buildings past team members have constructed include a tribal library and assembly hall. Through communicating with tribal members about their needs, the Yizhu team has also discovered that it is imperative for the tribes to establish a stable economy environment to incentivize young people to return to the tribes and thereby sustain the tribes.

With this in mind, the Yizhu team collaborated with commercial design students from Chung Yuan University in creating an overall brand identity that includes a marketing platform and promotional items for the produce of the Shihlei Tribe. Students utilized their specialties in architecture and business design to renovate the public spaces of the tribe by building up an agricultural marketing platform that also functions as both a senior care and an activity center. In December 2018, the Facebook marketing page went online, and a bazaar hosted in the same month was also quite popular.

"I was quite impressed with the Shihlei Tribe people's optimism and love for their environment," said the senior student Chang Ying-Han of Taipei Tech architecture. "Although the project was part of a required social service course, it is a great opportunity to help others with my specialties."

"I felt a sense of achievement when tourists showed their interest by coming to the stalls we designed," said master student Wu Shih-Ching of Taipei Tech architecture.

Taipei Tech Dean of College of Design, Huang Chih-Hong, indicated that it would have been a great pity if this high-quality, organically-grown produce was left to rot. Therefore, the residents here agreed immediately when we made this proposal to sell their products in a different way. "We want more people to buy these high-quality vegetables," he said.

Huang also indicated that the cooperative economy is a way of sustainable operation for small-holder farming in many regions in Europe. On the basis of that, Taipei Tech tries to sell the produce through the co-op stores on campus to promote the brand and the products of Shihlei Tribe in the heart of the urban area.

"Now there have been nine young people returning to the tribe in the second half of this year," said Huang. "This is considered a fruitful result of our efforts in realizing university social responsibilities during these years, or even corporate social responsibilities if this marketing strategy becomes more mature."

"Hopefully, the tribe will be able to independently operate, manage, and market their commodities following the cooperative economy mode, and thus becomes prosperous in the future," Huang said.