



31 March 2012

**Science, Technology and Education News from Taiwan
Number 03 — March 2012**

The National Science Council (NSC), to become the Ministry of Science and Technology as part of a government reorganization program, will play a key role in “technological innovation” by creating a better research environment, discovering and fostering potential talent, and transforming the nation’s industries from an “efficiency-oriented” focus to an “innovation-oriented” mindset, according to NSC Minister Cyrus Chu. The NSC currently reviews a budget of about NT\$ 100 bio. (US\$ 3.4 bio.), of which some NT\$ 60 bio. are slated for the general technology budgets of other government agencies, while the other NT\$ 40 bio. is for NSC’s own operating budget. The authority to review budgets will be transferred to the Cabinet’s Board of Science and Technology after NSC becomes a ministry.

News highlights

An international team of researchers from Taiwan, South Korea, Japan, Singapore, China and the USA have identified eight genes that could predict the incidence of Type 2 diabetes – scientists have developed Taiwan’s first current-resistant undersea robot – Taiwan and Russia expand their top wave dynamics fundamental research and application – a medical team invented the virus sensor for children’s medical care – human testing of a locally developed flu could begin soon – Taiwan and Europe could jointly develop an advanced navigation system – Taiwan and Japan pursue biomedical partnership – a company unveiled a nano additive for upgrading fuel efficiency - National Chiao Tung University has made a significant breakthrough in the field of molecular electronic devices and produced the first ever applicable single-molecule protein transistor, which opens a new page with regard to the probability introducing biomedical nanotechnology in semiconductor manufacturing.

Contents

1.	Taiwanese researchers develop current-resistant undersea robot	2
2.	NCKU to Set Up Taiwan –Russian Research Center on Wave Dynamics	2
3.	NCHU Inaugurates Taiwan-U.S. Research Center on Plant and Food Biotechnology	2
4.	Pterostilbene Found Effective to Chemosensitivity; NCKU Researchers Prove Nicotine Hinders Bladder Cancer Chemotherapy	3
5.	National Yang-Ming University Identified Critical Protein Holding Over Neurodegeneration	3
6.	Innovative Breakthrough for Long-Distance Medical Care: NTU Cross-Boundary Medical Team Successfully Invented the Virus Sensor for Children's Medical Care	4
7.	Taiwan university successfully flies pilotless turbojet plane	5
8.	Nature Power Opto Has Unique LED Lighting Dimming Technology	5
9.	NCU sets up first national research center on renewable energy	5
10.	Researcher reports breakthrough in orchid breeding	6
11.	Human testing of locally developed flu vaccine to begin soon	6
12.	ITRI fire-resistant material wins US award	6
13.	Taiwan, Japan pursue biomedical partnership	7
14.	NCKU medical school signs MOU with U.S. university on cancer research	7
15.	Taiwan team finds factor inducing head, neck cancer migration	7
16.	Diabetics are more prone to tuberculosis: physician	8
17.	TSMC, Altera develop pioneering computer chip test vehicle	8
18.	Taiwan seen well-poised to jointly develop advanced navigation system	8
19.	Professor helps farmers with natural bacteria	9
20.	Taiwan Needs Industrial Transformation Aiming at Humancentric Innovation: Official	10
21.	Wang Tech Unveils Nano Additive for Upgrading Fuel Efficiency, Cutting Emission	10
22.	Multinational team makes breakthrough in diabetes research	10
23.	Taiwan unveils new green energy invention	11
24.	New green technology converts fried chicken into electricity	11
25.	NCTU Produces First Single Molecule Protein Transistor That Can Decode Personal Genetic	12
26.	Researchers see new users for humble algae	12
27.	Taiwan develops cosmetics made from wax apples	12



1. Taiwanese researchers develop current-resistant undersea robot

(Central News Agency, 29 02 2012)

Taiwanese researchers working with a local company said that they have developed Taiwan's first current-resistant undersea robot that can resist strong underwater currents and operate in turbid waters. The robot, or Remotely Operated Vehicle (ROV), uses energy-saving LED lighting, can automatically adjust its posture to the environment and can transmit images over fiber optic cables. So far, the ROV, which measures 1.8 meters long and 1 meter wide, has been able to dive to 600 meters, said the team, which consists of researchers from National Cheng Kung University (NCKU), National Sun Yat-Sen University and local bolt maker DWTEK Co. "The ocean environment around Taiwan is very complicated and some of the ROVs made abroad cannot be used here," said team member Fang Ming-chung, an NCKU professor. After the new ROV is launched, Taiwan will be able to cut back on its dependence on foreign equipment to carry out underwater research and will have a craft that is custom-made for the country's marine environment, said Fang. According to a forecast by market research institute Douglas-Westwood, the market value of ROVs will have grown to NT\$50.7 billion (US\$1.72 bio.) by 2015, up 190 % from the NT\$26.7 bio. in 2010, said Fang. He estimated that Taiwan could transform from an importing to an exporting country of underwater equipment within five years.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aTPS&ID=201202290041

2. NCKU to Set Up Taiwan –Russian Research Center on Wave Dynamics

(MEPO Forum, 01 03 2012)

To strengthen the academic research relationship between Taiwan and Russia, Tainan Hydraulics Laboratory (THL) and Research Center of Ocean Environment and Technology (RCOET), National Cheng Kung University (NCKU), plan to establish a transnational research center, "International Wave Dynamics Research Center, IWDRC, NCKU" for top wave dynamics fundamental research and application, the university announced recently. The research group of IWDRC will include the THL and RCOET, NCKU from Taiwan side and the Moscow M.V. Lomonosov State University (MSU), Wave Research Center, A.M. Prokhorov General Physics Institute, Russian Academy of Sciences (WRC, GPIRAS) and P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences (IORAS) from the Russia side. According to the project investigator of the center, Yang-Yih CHEN, a world-renowned scholar in the research of non-linear wave dynamics and Director of THL, NCKU, the IWDRC will comprise three groups, namely, Theoretical Laboratory of Non-linear Wave Processes, Experimental Laboratory of Non-linear Wave Processes, and Laboratory of Laser and Acoustic Remote Sensing of the Ocean. THL will contribute to homeland security maintenance of Taiwan's domestic water conservancy and coastal and marine physics, chemistry, environmental background investigation, and to large-scale transnational study as well, according to Prof. Ray-Yeng YANG, the leader of international cooperation and research and development group of IWDRC, NCKU.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010219003&ctunit=208&ctnode=287&mp=7>

3. NCHU Inaugurates Taiwan-U.S. Research Center on Plant and Food Biotechnology

(MEPO Forum, 01 03 2012)

National Chung-Hsing University (NCHU) in Taiwan and the University of California, Davis (UCD) in the U.S. set up a research center on plant and food biotechnology in Taiwan under an NSC five-year, NTD 100-million program to solicit overseas partnership. This was the first internationally cooperated center set up with the subsidy under the program since its beginning. With the establishment of the center, an integration platform of the research resources and advantages of both sides could be provided. The establishment of NCHU-UCD Plant and Food Biotechnology Center (PFBC) was directed by NCHU Professor Shyi-Dong YEH at the Department of Plant Pathology. The topics of the center were planned to cover plant development, plant-pathogen interaction, functional food and cross-nation agriculture technology transfer. NCHU also planned to provide a research environment that is friendly to international scholars, expecting to solicit more globally top research talents. As NCHU indicated, NCHU assumes a leading position in the field of tropic and subtropical agriculture research in the world, while UCD is the most important academic institute of agriculture sciences in the U.S., listed as one of the top 50 universities in the world during the past decade. Besides, UCD is also recognized as the topmost institute in the world in the fields of animal and plant sciences, agriculture and food technology. The cooperation between the two universities is expected to enhance Taiwan's agriculture biotechnology and to increase Taiwan's academic impact and visibility in the globe. The center is to conduct four core research programs that cover six integrated research plans, which will be implemented by researchers from the Department of Plant Sciences, Plant Pathology and Food Science and Technology, UCD and the Graduate Institute of Biotechnology, Department of Plant Pathology and Food Science and Biotechnology, NCHU.



For this session, 18 research center establishment plans were submitted to NSC, and four were approved. In addition to NCHU-UCD Plant and Food Biotechnology Center, the other three plans approved are for the establishment of: a cross-national center on cancer co-established by National Taiwan University College of Medicine, China Medical University and the University of Texas MD Anderson Cancer Center; a cross-national center on intelligent robot supported by National Taiwan University, Université Pierre et Marie CURIE (France) and Institut National de Recherche en Informatique et en Automatique (France); and an international center on super computing co-founded by National Cheng Kung University and IBM Thomas J. Watson Research Center.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010223002&ctunit=208&ctnode=287&mp=7>

4. Pterostilbene Found Effective to Chemosensitivity; NCKU Researchers Prove Nicotine Hinders Bladder Cancer Chemotherapy

(MEPO Forum, 01 03 2012)

Cigarette smoke is regarded as one major risk factor inducing bladder cancer and enhancing its resistance to chemotherapy. Professor Ying-jen WANG at the Department of Environment and Occupational Health, Medical College of National Cheng Kung University (NCKU) discovered that pterostilbene induces cancer cells' autophagocytosis and then can be used to treat chemotherapy-related allergic reaction and nicotine-induced chemoresistant bladder cancer during his investigation of the mechanism of nicotine's promotion of cancer development. The findings were already published in an article, "Long-term Nicotine Exposure-Induced Chemoresistance Is Mediated by Activation of Stat3 and Downregulation of ERK1/2 via nAChR and Beta-Adrenoceptors in Human Bladder Cancer Cells" in *Toxicological Sciences* (2010 115:1). According to Professor Ying-Jen WANG, in Taiwan bladder cancer is the eighth most common cancer among the male population, the fourteenth among the female. On the basis of the proved conclusion that nicotine is a common carcinogen causing lung cancer, Professor WANG and his postdoctoral researcher Rong-Jane CHEN furthered the study of nicotine's mechanism of the promotion of the cancer cell development and its chemoresistance. By the contrast that the bladder cancer patients who continue to smoke while receiving chemotherapy have poorer outcomes than the nonsmoking counterparts, they tried to suggest that certain substance in cigarette smoke can help the cancer cells resist the cell toxicity caused by drug and increase chemoresistance. Professor WANG pointed out, nicotine is the major substance in cigarette smoke, which can be found in the urine of smokers. Nicotine has been proved to be a common carcinogen, and the activation of nicotinic receptor, especially acetylcholine receptor and epidermal growth factor receptor, can accelerate proliferation of cancer cells, hinder apoptosis, induce angiogenesis and even promote cancer cell invasion and metastasis. Thus, the team thought that long-term nicotine exposure may be the cause of bladder cancer cells' chemoresistance. Via the study of the molecular mechanism of nicotine's inducing chemoresistance, the team tried to understand how cancer cells can bear the toxicity caused by drug and survive after chemotherapy. The study aims to provide information for clinic therapeutic strategy as well as to suggest ways to enhance patients' chemosensitivity. According to WANG's research, which uses Con-T24 cells that is adopted from bladder cancer cell lines and Nic-T24 cells that have been exposed to nicotine for a long time, the T24 cells that have been interacting with nicotine for a long time can suppress the drug-induced apoptosis better than the counterparts, while more expression of cyclin D1 and PCNA proteins in Nic-T24 cells, that detain the cells in the phase of G0/G1 cell cycle, can be observed. Besides, the suppression of ERK1/2 caused by the overactivation of Stat3, the indicator for chemoresistance, is observed in Nic-T24 cells, and by testing with the inhibitor of nicotinic receptor or β -receptors, it is proved that the signaling transduction pathway is regulated by these receptors. WANG's research indicates that the reduction of nicotine exposure in clinic cancer therapy can increase chemosensitivity, while the findings about the function of nicotinic receptors, β -receptors or Stat3 could contribute valuable information for new drug development for chemoresistant bladder cancer patients.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010224037&ctunit=208&ctnode=287&mp=7>

5. National Yang-Ming University Identified Critical Protein Holding Over Neurodegeneration

(MEPO Forum, 01 03 2012)

A critical solution to nine incurable neurodegeneration-related disorders including cerebellum atrophy may be discovered. In a nine-year research conducted by Associate Professor Tzu-Hao Cheng at National Yang-Ming University (NYMU) and his doctoral student Chia-Rung LIU, the critical factor to delay the incidence, Spt4, has been identified. If the Spt4 drug development goes well, the incidence of these neurodegeneration disorders may be delayed for twenty years, and the patients' lifespan may be extended. One of the listed author of the article, Chia-Rung LIU, a doctoral student at NYMU indicated that these neurodegeneration disorders are caused via genetic mutation, while what the NYMU team has led to discover is that the transcription elongation factor Spt4 is in



a hazard relation to the pathogenic genetic mutation. These findings have been applied for patents in multiple countries, and an article about the findings has been published in *Cell* on February 17. A press conference was held on February 22, hosted by NYMU President Kung-Yee LIANG. Associate Professor Tzu-Hao CHENG explained at the press conference that Spt4, one kind of protein in the brain, could also be accomplice that helps the mutated or flawed genes yield toxic proteins. The accumulation of toxic proteins in the brain kills brain cells, causing voids in the brain and leading to disorders such as cerebellum atrophy, Huntington's disease, etc. These diseases are presently incurable, and the patients can only let the diseases develop and pass away. The symptoms of cerebellum atrophy are expressed as gradual dysfunction of the body movement coordination caused by the atrophy or malfunction of the brain, including lisp, swallow difficulty, shaky hands and unsteady steps. They often occur at the age between twenty and fifty, while the mutated genes could be passed down to the offsprings. Huntington's disease is caused by a large volume of loss of the brain cells that leads to discoordination, cognitive decline, and other physical disorders like jerky, random, and uncontrollable movements, lisp, swallow difficulty, incontinence and memory deficits. Right now the research has entered the phase of animal experiments and new drug design. Also the applications for international patents have been submitted. CHENG said, the new drug that can slow down the speed of degeneration could extend the lifespan of the patients for twenty years and help improve the quality of patients' life.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010225002&ctunit=208&ctnode=287&mp=7>

6. Innovative Breakthrough for Long-Distance Medical Care: NTU Cross-Boundary Medical Team Successfully Invented the Virus Sensor for Children's Medical Care

(MEPO Forum, 01 03 2012)

There have been 36 deaths in Taiwan caused by the B flu epidemic ever since the eve of the Chinese New Year. Also, the stomach flu epidemic has been attacking Taiwan by causing severe symptoms and even deaths all over the island. It will definitely relieve the severe condition a lot by adopting this effective treatment within sufficient medical care and the innovative virus sensor invented by NTU medical team. The NTU cross-boundary medical team led by Professor Shi-Ming LIN at NTU Medical School and Professor Luan-Yih CHANG from the pediatrics department of NTU Hospital announced that they've successfully invented a virus sensor for children's medical care at home, which features virus detection, data calculation and long-distance transmission. This innovative invention makes it possible that parents will be able to detect the stomach virus and the A/B flu epidemic for their children at home within only 12 minutes. Also, it enables parents to report the detection results back to their doctors via smart phones immediately. Thus, it is more effective and efficient than the conventional treatment. NTU President Si-Chen LEE highly recommended and recognized the innovative breakthrough of this virus sensor invented by the NTU cross-boundary medical team led by Professor Shi-Ming LIN and the following doctors: Pan-Chyr YANG, Luan-Yih CHANG, Bor-Ching SHEU. They've been devoting themselves to the area of children's medical care to improve the conventional virus detection by experimenting sample of each patient and developing the optical technique combined with nanotechnology. Recently the NTU medical team has just successfully presented the portable gadget, sViroSensor (the virus sensor for children's medical care at home), detecting the stomach flu and the flu epidemic for young children. It is more effective and efficient than the conventional treatment. Meanwhile, the home sensor avoids the risk of public infection in hospitals, which is great to be seen for improving children's medical care. Professor Shi-Ming LIN has also pointed out that it's crucial to improve the conventional virus detection for the stomach flu epidemic because it usually took one to five days to receive the detection results, which meant a great deal of suffering and medical expenses before receiving the results. Consequently, lots of patients suffered from the delay of treatment. The virus sensor for children's medical care at home features virus detection, calculation and long-distance transmission. Moreover, this innovative invention is combined with the nanotechnology, optical technique and the features of smart phones. The newly invented detector captures the results of the virus as the following: the B flu influenza, the A flu, the EV 71 stomach flu, the Adeno virus. The detection results can be received immediately by using nanotechnology and the optical technique via an innovative chip using nano-technology, which makes the accuracy up to 90 %. Something great to be expected is that this innovative invention makes it possible that parents will be able to detect the stomach virus and the A/B flu influenza for their children at home within only 12 minutes. Also, it enables parents to report the detection results back to their doctors via smart phones immediately, which makes the long-distance consult possible in time. Also, doctors will be able to diagnose the patients with the most appropriate description according to the detection results from the parents via smart phones. Not only is the home sensor more effective and efficient than the conventional treatment, it also helps avoid the risk of group infection in hospitals. With the great support from the National Research Program for Biopharmaceuticals conducted by the National Science Council and the financial aid from National Taiwan University, this research plan has been successfully promoted and is thus viewed as the spotlight recently. NTU President, Si-Chen LEE pointed out that National Taiwan University has been focusing on health care over the years and thus founded the cross-boundary research team for a better medical environment with significant achievements



and contributions recently. What the team has accomplished is absolutely a great feedback showing their contribution to the society.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010225003&ctunit=208&ctnode=287&mp=7>

7. Taiwan university successfully flies pilotless turbojet plane

(Central News Agency, 01 03 2012)

Taiwan's National Cheng Kung University in Tainan successfully flew a pilotless aircraft powered by a turbojet engine, with the school saying the technology could lead to the ground-breaking development of personal flying vehicles. The aircraft, named Sky Fortress-III, was the first university project in the world to combine a turbojet engine with a pilotless plane, according to Lai Wei-hsiang, professor of the southern school's Department of Aeronautics and Astronautics Engineering. The department has been devoted to the development of pilotless planes for more than ten years. Previous pilotless vehicles built by the university were all powered by propellers. During the trial flight, the speed of the 7.5-kilogram turbojet aircraft, which carried objects weighing nine kilograms, reached 150 kilometers per hour. The research team, led by Lai, estimated that Sky Fortress-III, over 3 meters in length and with a wingspan of 3 meters, could carry up to 20 kgs and had the potential to reach a speed of 300 kph. Lai said that weight capacity and speed were the main focuses of pilotless plane development. The new planes could even be equipped with other technologies, like sensor devices or photography equipment, to detect and monitor a typhoon's course and internal structure, Lai added.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201203010046

8. Nature Power Opto Has Unique LED Lighting Dimming Technology

(China Economic News, 02 03 2012)

Nature Power Optoelectronics Technology Co. is a winner of the Taiwan government-organized National Invention & Creation Award with a proprietary dimming technology for LED lighting. Founded in 2006, the LED-lighting startup is made up of experienced specialists in electronic-circuit, power-supply, software and optical-lens designs. The dimming-enabled switches, requiring no extra devices, can tune light intensity of LED light bulbs and light tubes and offer a number of dimming approach settings, including five-phase dimming, passive infrared-activated (PIR-activated) dimming, and seamless dimming. The technology adjusts light intensity smoothly, making it an eye-friendly dimming technology. The company's dimming technology adopts pulse width modulation (PWM) design and has four separate output channels, avoiding short circuit in one channel affecting others. Wide power-input range and high power output make the dimming technology available for various LED lamps. Dimming control can reach more lights through added extension lines. Nature Power also offers contract design services in addition to its brand-name operation. The company has built its strength by integrating management of R&D flow with management of manufacturing process, ensuring good quality while maintaining cost efficiency.

http://cens.com/cens/html/en/news/news_inner_39444.html

9. NCU sets up first national research center on renewable energy

(Central News Agency, 06 03 2012)

National Central University (NCU) inaugurated a national-level research center on its campus Tuesday with the aim of developing renewable energy in Taiwan. The research center has received a NT\$140 million (US\$4.74 million) grant from the National Science Council (NSC) under the Executive Yuan to carry out research and development in sustainable and renewable energy, said Wu Chun-guey, head of the research center. The first of its kind in Taiwan, the Advanced Laboratory of Accommodation and Research for Organic PhotoVoltaic (AROPV) is aimed at expediting the development of this form of power supply and helping to improve the technique's global competitiveness, Wu added. Dye-sensitized solar cells, the most efficient type developed so far and which can be applied to consumer electronics such as cell phones or iPods, will initially be the center's main R&D direction, Wu said. The center will also be instrumental in integrating R&D in new-generation organic solar cells serving the organic solar cell community, and international recognition of solar cell efficiency measurement and instrument equipment verification, as well as developing an open platform for device fabrication and measurement. NSC Deputy Minister Chen Cheng-hong said he hopes the center will improve Taiwan's international research credibility.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201203060051
<http://www.taiwantoday.tw/ct.asp?xItem=187393&ctNode=445>



10. Researcher reports breakthrough in orchid breeding

(Central News Agency, 07 03 2012)

A researcher has reported success in the use of inter-generic hybridization to produce moth orchids in eye-catching colors and alluring fragrance that have won silver and bronze medals at the ongoing 2012 Taiwan Orchid Show in Tainan, southern Taiwan. "This is a breakthrough in the breeding of moth orchids," Tsai Chi-chu, an associate researcher at Kaohsiung District Agricultural Research & Extension Station, told CNA. Tsai noted that currently, it has been difficult to use intra-generic hybridization to improve color and fragrance due to limited germplasma. He therefore daringly opted to use inter-generic hybridization and embryo rescue technology to produce his unique and attractive moth orchids. After a decade of research, he reported, the technology has matured. He noted that the successful inter-generic hybridization rate for rhyntonopsis -- an inter-generic hybridization of the foxtail orchid and the moth orchid that combines the elegant beauty of the orchid as well as an exuberant fragrance -- and a rare orange-color asconopiss, which is an inter-generic hybridization of the ascocentrum and the moth orchid, have reached over 30 percent. Tsai has also used the technology to introduce new artificial genus, noting that chenara, chouara and amenopsis have already been registered with the Royal Horticultural Society in the United Kingdom. He noted that more than 20 new artificial genus have been embryo-rescued and will be able to be registered once they have flowered. The Kaohsiung District Agricultural Research & Extension Station said moth orchids currently have the highest output value among Taiwan's agricultural exports. It noted that half of the moth orchid seedlings in the world are produced in Taiwan, showing that the country has a competitive edge in breeding and cultivating the plants.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201203070039

11. Human testing of locally developed flu vaccine to begin soon

(Central News Agency, 09 03 2012)

Human testing of domestically developed vaccine against the H5N1 avian flu virus is expected to begin next month at the earliest, an executive of Adimmune Corp., a local vaccine manufacturer said. If launched in April, clinical trial of the H5N1 vaccine is expected to be completed in the first quarter of 2013, which will allow Taiwan to confront the deadly virus should an outbreak occur, Adimmune CEO Chang Chin-chuan said. Animal testing of the H5N1 vaccine was completed late last year, he said. Taiwan is classed as H5N1-free. Once human testing is completed, the H5N1 vaccine is expected to be offered to all members of the Taiwan public aged over 3, Chang said. According to the Centers for Disease Control, Taiwan has since 2003 imported H5N1 vaccine from abroad as a preventive measure. There are 100,000 doses in inventory at present. The vaccines are available for medical personnel, disease prevention workers and people in the poultry farming sector. A total of 589 cases of humans contracting the H5N1 virus have been confirmed worldwide since 2003, 348 of which have been fatal, representing a mortality rate of nearly 60 percent. Of the cases, 185 occurred in Indonesia, 163 in Egypt and 121 in Vietnam, according to the World Health Organization. Meanwhile, according to the World Organization for Animal Health (OIE), H5N1 infection has been rising worldwide this winter, with the number of cases nearly doubling in February over the figure reported in January. So far this year, 51 cases have been reported in nine countries and areas, including Hong Kong, Vietnam, Nepal, Bangladesh, India, Sri Lanka, Bhutan, Australia and South Africa, in that order, according to the OIE.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201203090018

12. ITRI fire-resistant material wins US award

(Taiwan Today, 09 03 2012)

Taiwan's Industrial Technology Research Institute received an Innovation Challenge Award from U.S.-based Aviation Week magazine March 7 for developing Reddex, a nontoxic, fire-resistant material that can be used in airplanes and a host of other products. Reddex is robust in texture and bonds easily to other objects. It does not produce toxins even under high temperatures and is therefore an ideal aircraft surface covering, according to an ITRI researcher. "The outstanding technology to control the environmental protecting incombustibility material is not only unique, but also crossing several categories to produce value for customers," the magazine said. ITRI said that when Reddex is used in houses, it can protect substances coated with it for about 60 minutes even in temperatures higher than 1,000 degrees Celsius. It can also help steel frames "maintain strong structural adherence to the main structure of a building, and thus protect a building from catching fire or being damaged by fire." ITRI Executive Vice President Liu Jonq-min received the award from Gregory Hamilton, president and group publisher of the magazine, in Washington, D.C. Liu said he expects the material to be further applied to airplane partition boards and daily-use products as it meets related EU environmental regulations.

Among 165 technology contestants from around the world, ITRI was the only winner from Asia; other winners this year include Rockwell Collins Inc. in the U.S. and the Air New Zealand Group. The annual Innovation Challenge



award is given out to “recognize and promote the groundbreaking work being done by tiered suppliers within the aerospace and defense industry,” according to Aviation Week.

<http://www.taiwantoday.tw/ct.asp?xItem=187539&ctNode=445>

13. Taiwan, Japan pursue biomedical partnership

(Taiwan Today, 14 03 2012)

Taiwan and Japan signed a biomedical memorandum of understanding March 14 in Taipei City, further strengthening industrial exchanges between the two countries. The agreement will see Hsinchu-based Chinan Biomedical Technology Inc. and Japan's International Grain Plan Support Center Preparation Room jointly develop advanced equipment for proton cancer treatment, according to InvesTaiwan Service Center. Signed by Chinan Biomedical CEO James Chin-an Chen and his Japanese counterpart Masaru Sugimoto, the deal clears the way for the Japanese firm to invest NT\$1 billion (US\$33 million) in the Taiwan-based project. “The MOU is the first tie-up between Taiwan and Japan's biomedical sectors since the Ministry of Economic Affairs started promoting bilateral industrial cooperation in May 2011,” ITSC head Christophe Lai said. The collaboration is expected to fast-track biomedical development in both nations and provide more effective treatment for cancer patients worldwide. It also enables the Japanese firm to make inroads into the mainland Chinese market. Lai said proton cancer treatment is more desirable to other types of external beam therapies as it localizes radiation dosages, causing less damage to normal body tissue and fewer side effects. Despite these benefits, just a handful of Taiwan hospitals offer the service, mainly using equipment imported from Japan. Advanced technology and high production costs are cited by industry analysts as major factors limiting take-up of the treatment. Established in 2011, Chinan is the first local company to market the service in Taiwan. In addition to the memorandum, the firm has R&D pacts in place with National Synchrotron Radiation Research Center, National Tsing Hua University and National Central University.

<http://www.taiwantoday.tw/ct.asp?xItem=187818&ctNode=445>

14. NCKU medical school signs MOU with U.S. university on cancer research

(Central News Agency, 20 03 2012)

The medical school of National Cheng Kung University in Tainan signed a memorandum of understanding (MOU) Tuesday on cooperation with the Ohio State University's college of pharmacy. The two institutes plan to form a research team to study pancreatic cancer and collaborate on developing new drugs for the disease in the five-year cooperation project, according to NCKU, which has one of the best medical schools Taiwan. The college can provide its clinical experience, while the American school can offer medicine and experience in developing new drugs, said Lin Chyi-her, dean of the NCKU's college of medicine. The two facilities will also organize joint workshops allowing their researchers and graduate students to exchange expertise, Lin added. For the Ohio university, the alliance with NCKU and the joint efforts for new cancer treatments are beneficial, said Robert Brueggemier, dean of the pharmacy college. Pancreatic cancer is one of the most severe and invasive types of malignant tumors. It is difficult to treat and the patients' post-operative conditions are often not as good as for some other cancers, NCKU said. So far, no chemical medication has proved effective. A joint research laboratory is scheduled to open at NCKU Hospital's oncology center, said the Tainan school. The two institutes also plan to send delegations to visit each other and discuss case studies. In addition, a three-year project is slated to kick off in early August in an effort to extend the lives of pancreatic cancer patients.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201203200038
<http://web1.nsc.gov.tw/techwp.aspx?id=1010321001&ctunit=208&ctnode=287&mp=7>

15. Taiwan team finds factor inducing head, neck cancer migration

(Central News Agency, 20 03 2012)

A research team at National Yang-Ming University and Taipei Veterans General Hospital has identified a factor regarding cancer cell movement, which often affects head and neck cancer patients. The research results, published on the website of Nature Cell Biology magazine March 11, show the connection between the Twist1 protein in cancer tissue and the migration of cancer cells. There has not been much research in this area, according to Yang Muh-hwa, an associate professor at the university and an oncologist, who leads the research team, because head and neck cancers are not prevalent overseas.

However, the incidence rates of these types of cancers are rising rapidly in Taiwan, with oral cancer ranking the fourth-deadliest cancer among men. Metastasis of head and neck cancer cells mainly involves nearby areas, unlike



the spread of other types of cancer in later stages, which can occur in remote parts of the body. Head and neck cancer patients often suffer from difficulties in swallowing and speech, along with deformation of their appearance as the result of the cancer migration, Yang said. Through tests of three-dimensional cell culture, cancer tissues and animals, Yang's team found that a test for cancer tissue can be devised to predict cancer migration. Yang added that his team is also studying whether supplements of various proteins can be used as a treatment for head and neck cancers.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aLIV&ID=201203200020

16. Diabetics are more prone to tuberculosis: physician

(China Post, 21 03 2012)

Diabetics and lung cancer patients are six to seven times more likely to have mycobacterium tuberculosis, the causative agent in most cases of tuberculosis. Mycobacterium tuberculosis in blood occurs in 30 percent of diabetics and in 35 percent of lung cancer patients, said Hsieh An-Tsz of the Taipei Medical University Shuang-Ho Hospital. Other risk factors for tuberculosis include regular dialysis use and the long-term use of respirators. The rates of infection for such patients are 18 and 17 percent respectively, said Hsieh, citing a recent study on more than 2000 blood samples. Many persons infected with mycobacterium tuberculosis may show no symptoms, but go on to develop active tuberculosis later in life.

<http://www.chinapost.com.tw/taiwan/national/national-news/2012/03/21/335323/Diabetics-are.htm>

17. TSMC, Altera develop pioneering computer chip test vehicle

(Central News Agency, 22 03 2012)

Taiwan Semiconductor Manufacturing Co. (TSMC), the world's largest contract chip-maker, unveiled the world's first heterogeneous 3D IC test vehicle it jointly developed with U.S. manufacturer Altera. The Silicon Valley programmable logic solutions maker used TSMC's Chip-on-Wafer-on-Substrate (CoWoS) integration process to develop the pioneering device, according to TSMC. "Heterogeneous 3D ICs are one of the innovations enabling the industry's move beyond Moore's Law by stacking various technologies within a single device, including analog, logic and memory," TSMC said in an online release. Moore's Law, proposed by Intel co-founder Gordon Moore in 1965, is the guiding principle for the development of the computer chip industry. It states that the number of transistors on a chip doubles every two years. "Developing next-generation 3D ICs with Altera is a good example of how the two companies can work together to push semiconductor technology to another level," said Rick Cassidy, president of TSMC North America. The CoWoS process provides 3D IC semiconductor manufacturers with a thorough solution from the end-front production of wafers to the back-end assembly and testing, the company said. "Our partnerships with standards bodies, such as IMEC and SEMATECH, and our use of TSMC's leading-edge CoWoS manufacturing and assembly process put us in an excellent position to execute on our strategy of delivering heterogeneous 3D devices to our customers at the right time and with the right set of features," said Bill Hata, senior vice president of worldwide operations and engineering at Altera.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201203220047

http://cens.com/cens/html/en/news/news_inner_39656.html

18. Taiwan seen well-poised to jointly develop advanced navigation system

(Central News Agency, 23 03 2012)

Taiwan and Europe could jointly tackle the growing market for a new satellite navigation system, given Taiwan's strength in the field of electronics and semiconductors, a tech expert from the European Chamber of Commerce Taipei (ECCT) said. Pascal Viaud, co-chair of the ECCT's Technology Committee, said that the worldwide GNSS (global navigation satellite system) market is growing fast and its revenues are expected to increase at a compound annual rate of 11 percent over the next decade. The total market value of GNSS-enabled devices is forecast to grow from 133 billion euros (US\$176 billion) in 2010 to 167 billion euros this year and 244 billion euros in 2020, according to data released by GNSS Agency (GSA). "Cooperation between Taiwan and European manufacturers on the road market segment must be considered to address growing markets," Viaud said at the opening of the 2012 Prototyping Topic of Galileo Pro competition. The competition has been organized by the European Union (EU) and the state-funded Industrial Technology Research Institute (ITRI) to encourage worldwide innovation in the field of telematics. Viaud said Taiwanese players are "uniquely positioned to deliver 3D solutions on both front and back-end to European chip designers." New technologies developed and industrialized by major Taiwanese players



on advanced 3D packaging and system-in-package can also open new doors to European chip makers for integration and multiple GNSS compatibility, he said. According to GSA, road and LBS (location based services) will become the two market sectors with the highest revenue generated from 2010 to 2020, accounting for 56.4 percent and 42.8 percent of the total revenue during this period, respectively. The road segment includes personal navigation devices and in-vehicle systems, while the LBS segment includes GNSS-enabled mobile phones and services, the agency said. Viaud said Taiwan has a strong position in electronics and micro-electronics manufacturing. It also has an integrated supply chain of electronics with China and "go-to-market" expertise in the Greater China area, he said. A total of 18.06 million cars were sold in China in 2010, and the annual growth of the China automobile market is forecast at 12 percent to 15 percent in the coming years, according to GSA. The penetration rate of electric vehicles, which include telematics components and systems, will increase from less than 0.5 percent in 2014 to over 6.5 percent in 2020, indicating a lot of business opportunities in the Chinese GNSS-enabled device market, the agency said.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201203230034

19. Professor helps farmers with natural bacteria

(Central News Agency, 25 03 2012)

A Taiwanese biologist has developed a bacteria formula and farming technology that helps strengthen the roots of crop plants and reduces the need for pesticides and fertilizers, a technology that local farmers call "an elixir for crops." Professor Tsay Tung-tsun, director of the Department of Plant Pathology at National Chung-Hsing University (NCHU), has spent 18 years researching indigenous bacteria, and has developed a species named after his own family name, plus the years spent on the invention -- Tsay 18 Bacteria. He has taught farmers how to use his brand-name formula to make the roots of their crops healthy so that they are less susceptible to disease. Some foreign companies have offered NT\$60 million (US\$2.02 million) to buy his patent, and several local companies are willing to pay up to NT\$1 million a month for his professional advice. Yet, Tsay has sold his patented technology to only one company, on the condition that it offers low-cost services to farmers seeking to improve their harvests with his formula and technology. According to his own blog, Tsay 18 Bacteria Formula is a natural product made purely from his source bacteria plus soybean and sugar -- nothing else. The formula, which contains more than 10 amino acids, helps crop plants to develop healthy roots, prevents insect damage, increases the sweetness of the fruit, hardens fruit shells and lengthens storage time for the fruit, according to the inventor. Following are excerpts of reports by the China Times, a local newspaper, on Tsay's prowess and why local farmers have respectfully conferred upon him the title of "modern farming god": Tsay's "farmers lecture hall" gives classes to farmers from all over the country on Saturdays. Farmers aged from their mid-20s to early 70s swarm into his class, sometimes spilling over into the hallway, many seriously taking notes. He does not just teach them how to use his "Tsay 18 Bacteria" technology to keep their crops in good health. He also helps them build a management system that cuts costs and increases harvests by cutting the need for pesticides and fertilizers. Chang Yi-hsun, a fruit farmer, said the knowledge he has obtained from Tsay's class has helped him "clean up" his persimmon farm and has boosted the quality of his produce. Tseng Chao-ting, who owns a pear orchard that has won him the honor of "champion pear producer," said the university's technical guidance has helped him cut pesticide and fertilizer costs by 60 percent. Moreover, Tseng added, the quality of his fruit has improved and it lasts longer, while the sweetness of his pears has also increased. "Because of the improved quality of my pears," Tseng said, "my income has increased. I sell my products mainly by express delivery and I never worry about sluggish sales." At Tsay's urging, agricultural experts at NCHU formed the Taiwan Safe and High-quality Agriculture Extension Association (TSHAEA) three years ago, whose members tour the country almost all year round to offer their expertise to farmers. Farmers who have benefited from the group's professional knowledge have frequently reported that their crops have won championships in competition. Nearly 30 crops, including rice, pears, persimmons, melons, tomatoes, tea and dragon fruit grown by farmers receiving NCHU assistance, have won such honors. One tea farmer in Nantou County, central Taiwan, said that before joining the association, he had incurred losses for six straight years. But in the very first year after he joined the association, he saw his business making a profit because his tea was certified by internationally recognized institutions as containing zero pesticide residue. Tsay said Taiwanese farmers use an average of 13.5 kg of pesticides per hectare of land, surpassing the world average. "In fact, plants will grow well as long as their roots are taken good care of and there will be no need to use too much pesticide and fertilizer," said the professor. Wrong farming methods have cost farmers dearly and have damaged their harvests, "hurting themselves as well as the health of consumers," said Tsay. His assistance to farmers has earned him not just credit but also personal thanks from farmers, who have brought their sons to meet him, telling their offspring that "without the help of this professor, I would not have been able to pay your school tuition." Tsay said that when he receives such thanks, he feels his efforts have been well rewarded. He added that he is trying to divide the association



members into 27 subgroups for different crops, each of which will build a complete set of farming technologies that will be passed down to future generations.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?ID=201203250008&Type=aTOD

20. Taiwan Needs Industrial Transformation Aiming at Humancentric Innovation: Official

(MEPO Forum, 27 03 2012)

IAMOT 2012 Taiwan (International Association for Management of Technology 2012 Congress in Taiwan), hosted by the Institute of Technology Management, National Tsing Hua University, took place in Hsinchu on March 19. Facing the present global competition, Taiwan needs another industrial transformation, entertaining a demand-oriented and humancentric innovating conception, said Jung-chiou HWANG, Vice Minister of Economic Affairs. Hwang said, Taiwan's achievement in high technology has been widely recognized during the past few years, but the too much ICT-centric (information and communications technology centric) development has also created limits to industrial development. For example, although Taiwan's ICT industry is the major provider for the global cellphone markets, the major part of this market's profit goes to brands like Apple. He continued, the current industrial structure in Taiwan is too much centered around intermediate goods, and this cannot suffice the present global economic situation and its development. Hence, an industrial transformation to reorient the focus on demand-oriented and human-centric innovation is called for. Congress Chair, also Associate Dean of the College of Technology Management, National Tsing Hua University Shih-Chang HUNG indicated, too, that the topic of the year "Managing Technology-Service Convergences in the Post-Industrialized Society" aims at the development of the integration between technology and services, and its impact to the present situation. Hsinchu County Magistrate Ching Chun CHIU said in his opening address that the local policy of Hsinchu County emphasizes on five themes, including "green energy and photoelectricity industry," "biomedical industry," "cultural and creative industry," "transportation and tourism industry," and "intensive agriculture."

<http://web1.nsc.gov.tw/techwp.aspx?id=1010319001&ctunit=208&ctnode=287&mp=7>

21. Wang Tech Unveils Nano Additive for Upgrading Fuel Efficiency, Cutting Emission

(MEPO Forum, 27 03 2012)

Wang Tech Enterprise Co., Ltd., a Taiwanese maker dedicated to developing nanometer technology products, recently claimed that it has successfully developed and commercialized the "Full-Burn Fuel Economizer" after years of research and development. The company explains that the fuel economizer is a high-tech and globally patented Nano product that revolutionizes conventional internal combustion engine ignition to solve the problems, like carbon deposit due to incomplete fuel combustion and waste gas emission, which cause environmental pollution. Wang Tech claims that its new product achieves a breakthrough in the chain-reaction based ignition and combustion that is common in conventional combustion engine and totally improves the temperature gradients of such ignition, which resulted in incomplete burning of carbon and carbon deposit. The product allows the fuel to ignite and burn evenly, resulting in 100% burning efficiency and improved fuel economy. The nano fuel-performance enhancer additive has many advantages, Wang Tech says, including: saving fuel consumption by an average of 28%; removing carbon deposit; increasing power up to 15%; reducing waste gas emission by 36%; and extending mechanical life and cutting service and maintenance cost. The company plans to attend various automotive-related exhibitions to promote the nano-technology application product, so as to contribute to the carbon-reduction and environment-protection for a more sustainable globe.

http://cens.com/cens/html/en/news/news_inner_39684.html

22. Multinational team makes breakthrough in diabetes research

(Central News Agency, 28 03 2012)

A team of researchers from Taiwan and other countries has identified five new genetic locations and confirmed three associated with type 2 diabetes in East Asians, providing new perspectives on the cause of the disease, researchers said. The Asia Genetic Epidemiology Network, a consortium of researchers from Taiwan, South Korea, Japan, Singapore, China and the United States, made the discovery after studying the genetic data of over 50,000 people of East Asian ancestry. Of the eight genetic locations, four were also found to be associated with type 2 diabetes in Caucasians, but with "very few links," said Wu Jer-yuarn of the Academia Sinica's Institute of Biomedical Sciences. He said the consortium was formed with the aim of finding gene expressions that are unique to Asians in the disease, as studies on type 2 diabetes in the past have focused predominantly on gene studies of Caucasians. Two of the



genes identified -- GLIS3 and KCNK16 -- are important in the balance and regulation of blood sugar and insulin levels, according to the Taiwanese researchers on the team. Wu said they contributed to the study by offering an analysis of the genetic data of 2,000 Taiwanese people. Researchers said the findings, published in the U.S-based scientific journal Nature Genetics in January, could give scientists new leads on drug development that prevent or treat the disease. In 2011, 366 million people were suffering from diabetes, a number that is expected to rise to 552 million by 2030, said Chuang Lee-ming, an internal medicine professor at the National Taiwan University Hospital and a member of the team. So far some 40 genes have been identified linked to type 2 diabetes, said Wu. The five new genes identified by the Asian team are KCNK16, MAEA, GCC1-PAX4, PSMD6 and ZFAND3. GLIS3 is one of the three type 2 diabetes-related genes that had earlier been found by European and American researchers. The other two are PEPD and FITM2-R3HDML-HNF4A.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201203280031
<http://www.taipeitimes.com/News/taiwan/archives/2012/03/29/2003528988>

23. Taiwan unveils new green energy invention

(Central News Agency, 28 03 2012)

Taiwan unveiled a green energy invention Wednesday that will be able to play a part in energy saving and also make life easier for people living in disaster-stricken areas and remote regions. The equipment, which converts wood into electricity and heat, was among many exhibits shown to the media at a research park under the Taoyuan-based Chung Shan Institute of Science and Technology. Developed in the middle of 2011, the equipment uses the technology of a wood gasifier, in which wood chips are used to generate inflammable gas that can be used to boil water and cook, according to research staff at the institute. It can also produce enough electricity to operate household appliances, they added. In the event of disasters such as floods and earthquakes, the equipment will be useful for victims in areas where the power has been cut, they said. Noting that a huge amount of waste wood is produced in Taiwan every year, they said the invention can serve as a way of recycling and reusing this waste, while allowing a reduction in the use of non-renewable energy sources to run generators. According to the institute, one kilogram of wood can be converted into 0.8 kilowatt hours of electricity. Other exhibits include a solar-powered dune buggy and a fried chicken stand that uses the heat from the frying equipment to produce electricity

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201203280039

24. New green technology converts fried chicken into electricity

(Central News Agency, 29 03 2012)

A new fried chicken vending cart that can convert gas waste from frying chicken into electricity was unveiled Wednesday at a military dual-use technology exhibition held at the Lung-Yuan Research Park in Taoyuan County, northern Taiwan. The cart, invented by the Chung-Shan Institute of Science and Technology (CIST) converts waste gas from frying chicken into the electricity the cart needs to power its lighting system, extract cooking smoke, recharge the cart, and power advertisements and its frying safety system, said CIST second research division deputy-director Wu Chia-Fu. The idea was inspired by the process of generating electricity by recycling heat emitted by military vehicles. The chicken cart system costs about NT\$50,000 (US\$1,692.21), said Yu Chin-hung, one of the members of the institute's dual-use technology project. The cart can help reduce gas waste and improve the air quality at night markets, where fried chicken stands are a ubiquitous sight. Other renewable energy technologies unveiled by CIST include the application of an uninterruptible power supply (UPS), which is a smart power storage system commissioned by the Ministry of Economic Affairs Department of Industrial Technology (DOI). The project is aimed at building next-generation electricity saving systems to make the application of renewable energy in Taiwan more widely available. The smart energy storage system can manage and control many forms of renewable energy including wind and solar power, said CIST researcher Liao Yu-min. The energy system can act as a small but mobile electricity system, and when several systems are assembled, can form a power network for disaster relief, the outlying islands, remote areas, battlefield communications, and can even be incorporated into city electricity systems, Liao added. The advantages of UPS is it can make up for the shortcomings of renewable energy, which tends to be unstable and intermittent. The integrated power system can provide electricity of a quality similar to that of Taiwan Power Company, according to Liao. In addition, a dune buggy powered by solar and recycled heat that can reach speeds of up to 120 kph was also shown at the exhibition.

http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201203290006



25. NCTU Produces First Single Molecule Protein Transistor That Can Decode Personal Genetic

(MEPO Forum, 29 03 2012)

That a newborn baby's lifespan could be told simply with one drop of her or his blood is no longer a cinematic scenario. A research team from National Chiao Tung University currently adopted bio-nanotechnology and presented the first single-molecule protein transistor that can decode personal genetic sequences. The research team led by Professor G. Steven HUANG at Biomedical Electronics Translational Research Center, National Chiao Tung University has made a significant breakthrough in the field of molecular electronic devices and produced the first ever applicable single-molecule protein transistor, which opens a new page with regard to the probability introducing biomedical nanotechnology in semiconductor manufacturing. Related findings were published in *Nature Nanotechnology*, as the only "article" in this issue (the April issue). The variation of genetic sequences determines individual differences, including personality, potential diseases and lifespan. During the past few decades scientists have been using chain termination method to study genetic sequences, and the first decoding took place in 2005. The method adopted in the present protein transistor is to detect the different nucleobase by sensing the variation of electrical signals. This method allows for the determination of an individual's genetic sequences decoding within one hour with one drop of blood. The team indicated, the single-molecule protein transistor can be a better screening measure than monolayer film. It can provide instant and the clearest monomolecular reaction that yields quick ascertained judgments, reducing the waste of testing resources and, with the pharmacokinetic advances that have been benefitted by the quick responses, improving the accuracy of clinical experiments.

<http://web1.nsc.gov.tw/techwp.aspx?id=1010325001&ctunit=208&ctnode=287&mp=7>

26. Researchers see new users for humble algae

(Liberty Times, 29 03 2012)

While workers have exhausted themselves cleaning large amounts of *Sargassum horneri* and *Sargassum cristaefolium*, two species of brown macroalgae, on the shores of northern Taiwan for the past several weeks, researchers regard these organisms as a rare bonanza for their biofuel and alternative foodstuff potentials. A Council on Agriculture-sponsored team led by National Taiwan Ocean University Department of Foods professor Pan Tzong-liang and Chen Yan-chang, an associate professor in the aquaculture department, has nurtured various types of algae as potential biofuels or food sources for the past three years, discovering that these algae can be processed to yield not only alcohol and a source of food, but also used to absorb CO₂. A yearlong test of the common green alga *Ulva lactuca*, for example, has shown that 12 metric tons of it can absorb 1.3 metric tons of CO₂ per square meter. Chen has set up an algae growing station near the university, and also brings back tons of *Sargassum horneri* each day from nearby beaches. At present, it is sitting in tubs for observation and occasional testing. Chen says that this alga grows very rapidly and prefers salt water at 26 degrees Centigrade or below. It can double in size in just ten days or so, so that it is now ubiquitous along the northern coast. Pan says that these two species of algae are the best suited of all for the production of biofuels. In the university laboratory, Pan has managed to produce 23.6 grams of alcohol from 100 grams of algae, very close to the international record to date of 28 grams. However, from an efficiency perspective and looking at the ratio of product to raw material, it will be a while before algae can become a viable biofuel. Pan says that at present, *S.cristaefolium* sells for about NT\$100 per kilogram. After drying, that amount yields 100 grams of algae, equivalent to a cost of NT\$100 for 23 grams of alcohol, and that still doesn't take processing costs into account. However, Pan says that the algae absorbs CO₂ extremely well, and in the future, if the government begins assessing a "CO₂ exchange tax", algae could become a valuable commodity in Taiwan. Until then, though, the explosive growth of these two species is still a problem in the waters off the coast.

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=261370&CtNode=9>

27. Taiwan develops cosmetics made from wax apples

(Liberty Times, 30 03 2012)

Driving recorders affixed to motorcycles' rear-view mirrors, cosmetics products made from wax apples, and multi-colored anti-slip drain covers and grates are just some of the new inventions on display at an event held on Wednesday by the Ministry of Economic Affairs to help local developers of new products to generate business. Recalling his motive in developing a rearview-mirror motorcycle accident video recorder, Luo Jian-ming, the president of a local electronics company, says that motorcyclists are in more peril in the streets than car drivers. In March of last year he saw a taxi driver slam on his breaks when driving on the right-hand side of the road in order to stop for a customer, almost hitting a passing motorcyclist who was almost unable to stop in time. After eight months of continuous improvements, Luo integrated the recorder with rearview mirrors attached to motorcycles. The motorcycle engine-powered product, which is waterproof, dustproof and easy to disassemble, has 72-degree



**TRADE OFFICE OF SWISS INDUSTRIES
(TOSI)**

瑞 士 商 務 辦 事 處

Rm. 3101/31F, 333 Keelung Road, Sec. 1
Taipei 11012, Taiwan, R.O.C.
Tel. 886-2-2720 1001 Fax 886-2-2757
6984
e-mail address: tosi@swiss.org.tw
website: www.swiss.org.tw

perspective, and will hit the market in the middle of April for NT\$2,480 per pair. Meanwhile, Taiwan's very popular wax apple has become the latest item used in making cosmetics. Li Tian-ren, an assistant professor at the Chia Nan University of Pharmacy & Science and the head of R&D at Peptidecham Biotech Co., Ltd., remarked that the fruit used to develop the cosmetics came from those deemed by farmers to have no market appeal. A special technique was developed to extract various elements of the fruit, and it was found that they had whitening and anti-oxidizing effects that can inhibit the formation of melanin. The extracts were used to develop an essence and a cosmetic cream by Li. CingWei Casting Co. has developed multi-color anti-slip drain covers and grates. The company added a fastener to grates that allow the drain covers to be opened, but they can't be taken away, thereby preventing theft. The grates come in a variety of colors, and the opening between the slates in the grate is only 0.7 centimeter wide, helping prevent women's high heels from getting caught in them. Also, the openings are thin enough to prevent cigarette butts from being washed down into the sewers. The Taiwan Railway Administration ordered the grates last year and will be using them in a project that is elevating a stretch of the railway between Linluo and Zhutien in Pingtung.

<http://www.taiwanheadlines.gov.tw/ct.asp?xItem=261504&CtNode=9>