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The biomedical technology and product R&D center was inaugurated at the Hsinchu Biomedical Science Park on 18 May. The research center, to be managed by the National Science Council (NSC), is the first of the park's three facilities to begin operations. The other two centers — a hospital set up by the Department of Health that will be responsible for clinical experiments and serious disease care, and an incubation center set up by the Ministry of Economic Affairs — have yet to be completed.

Constructed on 38.1 hectares of land in northern Taiwan's Hsinchu County, the park is expected to become fully operational by 2015. Working in conjunction with Taiwan's information and communication technology sector, the three centers will coordinate public and private resources to create a biotechnology cluster for Taiwan. "Focus will be placed on product development, clinical trials, patent transfers and business incubation," NSC pointed out, adding that the concerted efforts will help sharpen the local R&D capability and fast track product commercialization. According to government plans, the biotech industry is to become Taiwan's next high-tech industry.

**Contents**

1.	Academia Sinica scores breakthrough in fighting pathogens	2
2.	NTU listed among top 100 universities for biology, medicine	2
3.	Taipei students take top honors at Moscow inventors' fair	2
4.	MediaTek to launch R&D center with NTU and hospital	2
5.	Taiwan inventors stand out at Paris fair	3
6.	Taiwan students shine at Physics Olympiad	3
7.	Taiwanese academic wins Nikkei Asia Prize	3
8.	Taiwan's generic drugmakers get R&D boost	3
9.	Taiwan students grab eight awards at international science fair	3
10.	ITRI wins prominent display technology award from industry group	4
11.	Israel, Taiwan extend scientific collaboration	4
12.	ITRI's Cloud Computing Development Yields Fruitful Accomplishment	4
13.	Genetic variants that influence blood pressure discovered	5
14.	Young Taiwan inventors display ingenuity at ITEX in Malaysia	5
15.	Taiwan Takes Part in AMS Project, Joining International Cosmic Particles Investigation	5
16.	Invisibility Cloak Might Be Possible! Taiwan Scientists Unfold the Secret of Cuttlefish's Camouflage	5
17.	Taiwanese scientist wins 2011 Nikkei Asia Prize	6
18.	Asia University perfects means of cultivating snow fungus	6
19.	Taiwan researchers develop nanomaterial for gas detectors	6
20.	Academic claims wild grass could meet Taiwan's energy needs	6
21.	Academia Sinica Scientists Discover How A Plant Virus Hitches a Ride to Cross the Cell Boundary	7
22.	Department of Biochemical Science and Technology Presents New Nano-Material Treatment for AMI	7
23.	ARTC Wins Gold, Silver Prizes at 39th Inventions Geneva	7
24.	First solar PV gas station opens in southern Taiwan	7



### **1. Academia Sinica scores breakthrough in fighting pathogens**

(Taiwan Today, 03 05 2011)

Researchers in Taiwan have found a new strategy for strengthening the effectiveness of “last resort” antibiotics that could lead to the development of new drugs to fight pathogens, according to Academia Sinica. A team led by Li Tsung-lin, an assistant research fellow at the institute’s Genomics Research Center, recently discovered a way of manipulating microbial enzymes that boosts the effectiveness of the antibiotics Vancomycin and Teicoplanin by up to a hundredfold. The team used X-ray protein crystallography and biochemical techniques to analyze Dbv29, a hexose oxidase involved in the biosynthesis of the glycopeptide antibiotic A40926, and through this catalyst mechanism and enzyme manipulation methods synthesized families of antibiotic analogs. Testing revealed that some of these new compounds demonstrated greater potency and efficacy than Vancomycin and Teicoplanin against multidrug resistant pathogens. According to Lin, the new approach could help scientists find new chemical diversity to combat antibacterial resistance. The team’s research was published in the journal Nature Chemical Biology on 10 April, followed by a report in The Scientist on 11 April.

<http://www.taiwantoday.tw/ct.asp?xItem=162489&ctNode=445>  
[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aLIV&ID=201105030030](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aLIV&ID=201105030030)  
<http://web1.nsc.gov.tw/techwp.aspx?id=1000504001&ctunit=208&ctnode=287&mp=7>

### **2. NTU listed among top 100 universities for biology, medicine**

(Central News Agency, 04 05 2011)

National Taiwan University (NTU) has been rated by the United Kingdom-based QS education network as among the world's top 100 universities for biological sciences, medicine and psychology. The only higher education institution from Taiwan to get a spot on the prestigious top 100 list, NTU is ranked 51st-100th in the three disciplines, according to the latest 2011 QS world university rankings. National Cheng Kung University and National Tsing Hua University were both ranked 151st-200th for medicine.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aSOC&ID=201105040015](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aSOC&ID=201105040015)

### **3. Taipei students take top honors at Moscow inventors' fair**

(Liberty Times, 06 05 2011)

Two high school students in Taiwan have captured top honors at the 14th annual Moscow International Salon of Inventions and Innovation Technologies. Their prize-winning invention, called “Mobile Communications Equipment,” combines different types of magnetic materials and places them on antennae or communications equipment, so that internal antennae can develop a multifrequency band directional effect. This allows the signal reception quality for a piece of mobile communications equipment to be effectively upgraded. The product was selected for the prize from among over 1,000 inventions submitted by more than 500 groups representing 17 countries around the world. Patent applications are pending.

<http://www.taiwantoday.tw/ct.asp?xItem=162924&CtNode=419>

### **4. MediaTek to launch R&D center with NTU and hospital**

(Central News Agency, 07 05 2011)

MediaTek Inc, a leading provider of chips for smartphones and other devices, announced it would work with National Taiwan University (NTU) and National Taiwan University Hospital to establish a research and development center for innovative medical electronics technology. MediaTek said that once the R&D center has been launched, the company will send engineers to work with the hospital’s cardiovascular and neural surgeons, as well as professors of the university’s institutes of mechanical engineering, applied mechanics and electronic engineering. The center will be divided into four research groups — biomedical signal processing, wireless and medical systems, biomedical sensor integrated circuits and national-level clinical tests. The biomedical signal-processing group will enable medical personnel to quickly obtain a patient’s exact biodata. The wireless and medical system group will seek to integrate wireless technology and medical equipment to simplify and facilitate the measurement, access and storage of medical and physical data.

The biomedical sensor IC group’s task is to bring together biomedical sensors and IC chips in microchips that can be developed affordably and dependably.

<http://www.taipeitimes.com/News/biz/archives/2011/05/07/2003502594>



## 5. Taiwan inventors stand out at Paris fair

(Central News Agency, 07 05 2011)

Taiwan garnered 32 medals, including four gold and nine silver, at one of the world's most prestigious invention fairs in Paris. Taiwan presented 43 items at the Concours Lepine International Paris 2011, making it the second largest competitor in the show, behind only France. The country's gold-medal entries included an optical fiber drawing device for communications use and a wrist watch that can turn into a flotation device capable of supporting 700 kilograms in an emergency. The other two winners were a device that produces electricity from a person's breathing and a heat dissipation device.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aECO&ID=201105080004](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aECO&ID=201105080004)

## 6. Taiwan students shine at Physics Olympiad

(Taiwan Today, 09 05 2011)

The eight Taiwan students competing in the 12th Asian Physics Olympiad won three golds, four silvers and one bronze to finish second overall at the event held in Israel. Some 120 students from 16 countries and areas took part in the competition, including Australia, China, Hong Kong, India, Indonesia, Israel, Mongolia, Russia, Singapore, Thailand and Vietnam.

<http://www.taiwantoday.tw/ct.asp?xItem=163160&CtNode=419>

## 7. Taiwanese academic wins Nikkei Asia Prize

(Central News Agency, 11 05 2011)

Wu Maw-kuen, director of the Institute of Physics at Taiwan's top research institute, Academia Sinica, won the Nikkei Asia Prize for his achievements in superconductivity research. The 61-year-old academic received the award in the science, technology and innovation category for his many achievements, such as the discovery of a substance that has an electrical resistance of zero even at a temperature of minus-200 degrees Celsius, according to the Japanese newspaper Nihon Keizai Shimbun. Wu, one of the three winners of the award this year, "contributed greatly" to the advancement of science and technology in Taiwan. In 1987, Wu and his graduate students at the University of Alabama found that yttrium barium copper oxide (YBCO) becomes superconductive at minus-178 degrees Celsius, above the boiling point of nitrogen. Wu is currently also the director-general of Taiwan's national nanoscience and nanotechnology program. He is the fifth Taiwanese to receive the award.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aECO&ID=201105110042](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aECO&ID=201105110042)

## 8. Taiwan's generic drugmakers get R&D boost

(Taiwan Today, 11 05 2011)

Taiwan's generic drugmakers are seeing significant improvements in their R&D capabilities under a Ministry of Economic Affairs subsidy program aimed at boosting sector output and sharpening international competitiveness. "This investment is spurring research and development and improving collaboration," said Wu Ming-ji, director-general of the MOEA Department of Industrial Technology. MOEA has provided NT\$220 million in subsidies to six local drugmakers, equating to around 33 % of their total R&D investment. The initiative, which began in 2010, aims to lift overall production from NT\$30 billion to NT\$40 billion per year and assist firms expanding their overseas presence. The NT\$1 trillion U.S. market will be a top priority.

The government-backed Medical and Pharmaceutical Industry Technology and Development Center has developed Taiwan's first anti-depression drug using traditional herbal medicine. The center has transferred the knowledge to a local firm, which will apply for drug testing clearance in June with the U.S. Food and Drug Administration.

<http://www.taiwantoday.tw/ct.asp?xItem=163406&ctNode=445>

## 9. Taiwan students grab eight awards at international science fair

(Central News Agency, 14 05 2011)

Taiwan students performed brilliantly in the Intel International Science and Engineering Fair (ISEF) 2011, grabbing eight awards at the world's largest pre-college science competition that was held on May 12-13 in Los Angeles, California. Twelve Taiwan students competed in nine out of a total of 12 categories, ranging from animal science to



environmental management. They seized one second prize, three third prizes and four special prizes. Sung Yun-chen and Hu Nai-wen, from Taipei Municipal First Girl's Senior High School, won a second prize with a team project at the physics and astronomy category. Chien Yun-Chen from Taipei Municipal First Girl's Senior High School won a third prize in the chemistry category with a project titled "Lighting Insulin with Gold Nanodots," which explored the links between diabetes and Alzheimers. Chen Si and Chen You-jung from the Affiliated Senior High School of National Kaohsiung Normal University each obtained a third prize in the animal science and computer science categories, respectively. More than 1,500 high school students from around the world took part in this year's ISEF competition, vying for prizes and scholarships totaling over US\$4 million.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aECO&ID=201105140006](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aECO&ID=201105140006)  
<http://www.taipeitimes.com/News/taiwan/archives/2011/05/15/2003503295>

#### **10. ITRI wins prominent display technology award from industry group**

(Central News Agency, 19 05 2011)

Taiwan's Industrial Technology Research Institute (ITRI) received the silver award of Display Component of the Year from the Society for Information Display (SID), the leading global display industry group, in Los Angeles. The institute was honored for its Flexible Substrate for Displays, which according to ITRI is the first and only technology to allow for the mass production and development of flexible and transparent displays of all sizes.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?ID=201105190009&Type=aECO](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?ID=201105190009&Type=aECO)

#### **11. Israel, Taiwan extend scientific collaboration**

(Central News Agency, 20 05 2011)

Israel and Taiwan will likely expand academic exchanges in the fields of marine science and robotics following the signing of a science cooperation deal, according to the Israel Economic and Cultural Office in Taipei (ISECO). The National Science Council (NSC) and ISECO signed on May 18 an extension of a science collaboration agreement, which will bring marine science and learning algorithm specialists from the two sides together on various projects, said ISECO Representative Simona Halperin. The two institutions have engaged in joint research on biomedicine and nanotechnology since 2006, and the positive experience prompted the signing of the pact, said Daniel Weihs, the chief scientist of Israel's Ministry of Science and Technology. "Our connection with Taiwan is one of the best," said Weihs, whose institution has similar cooperation programs with about 15 countries around the world. He believed that continued interaction would enhance the "complementary strength" between the two countries.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aECO&ID=201105200011](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aECO&ID=201105200011)

#### **12. ITRI's Cloud Computing Development Yields Fruitful Accomplishment**

(MEPO Forum, 20 05 2011)

ITRI's Cloud Computing Center for Mobile Applications presents the newly developed mobile data center (container-based computer) with its globally original cloud computing operation system, Cloud OS, both of which are expected to help Taiwan take the preemptive opportunities in the emerging cloud market.

Director-General of ITRI's Cloud Computing Center for Mobile applications, Dr. Tzi-cker CHIUEH points out, the hardware part of ITRI's cloud computing project is the container-based data center, namely, to use the container as the "computer case", so that the entire data center could obtain its mobility. As for the software part, ITRI develops its own original operation system Cloud OS, which enables the tele-company to provide value-added services easily as well as offers virtual server service for the civil companies—even the less electronized traditional industries can get aboard the cloud easily. ITRI's Cloud OS is designed to be equipped with an advancing cooling system, targeting Taiwan's subtropical environment. Besides, the system is also equipped with functions such as hardware management optimization, software execution, remote control, etc. Cloud OS is said to be the globally first large cloud operation system highly integrated with all the common functions sufficing the cloud software management demands, including material resources management, virtual resources management, data storage management, information security solutions, etc.

Besides, the mobility of the container-based data center makes itself a convenient environment for test as well as an eco-friendly environment with high cooling efficiency. The average PUE level of traditional data center is between 2 and 2.5, while the PUE level of ITRI's mobile data center could reach between 1.2 and 1.3.

<http://web1.nsc.gov.tw/techwp.aspx?id=1000513001&ctunit=208&ctnode=287&mp=7>



### 13. Genetic variants that influence blood pressure discovered

(Taipei Times, 22 05 2011)

Researchers from Taiwan and six other countries have identified five previously unknown genetic variants that influence blood pressure among populations with East Asian ancestry, according to Academia Sinica. The strongest of the five variants was observed near the gene ALDH2, which is encoded with an enzyme that helps metabolize alcohol. Part of the study concluded that blood pressure seems to be affected by alcohol intake, a finding that is supported by previous studies showing that this gene variant determines an individual's tolerance for alcohol by altering the ALDH2 enzyme's activity. These findings provide new insights into how doctors can regulate blood pressure in East Asian populations. The findings also suggest this kind of gene-blood pressure relationship may vary among populations with different ancestry. Until now, most research in this area had been conducted in populations of European descent. The loci, or gene locations, uncovered in this study may eventually help develop new drugs for treating blood pressure related conditions. The findings were published online in the journal, Nature Genetics, on 15 May.

<http://www.taipetimes.com/News/taiwan/archives/2011/05/22/2003503873>

### 14. Young Taiwan inventors display ingenuity at ITEX in Malaysia

(Taiwan Today, 23 05 2011)

Taiwan entries won a total of 124 medals at the International Invention, Innovation & Technology Exhibition (ITEX) in Kuala Lumpur, Malaysia, May 20-22. The Taiwan delegation's medal haul of 56 gold, 56 silvers and 12 bronzes marked a significant improvement over its performance at last year's event. The gold medal entries showcasing the ingenuity of Taiwan's young inventors included Weight Scales, a stand-on scale; Touch Lock, a foot-operated door lock system; and multifunctional rainwear.

<http://www.taiwantoday.tw/ct.asp?xItem=165030&CtNode=419>

### 15. Taiwan Takes Part in AMS Project, Joining International Cosmic Particles Investigation

(MEPO Forum, 23 05 2011)

The Alpha Magnetic Spectrometer No.2 (AMS-02), which is to be carried to the International Space Station (ISS) by the space shuttle "Endeavour" for the investigation of cosmic-ray collision, has been fully installed and tested. In the future, the spectrometer will be mounted in ISS, measure more than ten thousands times of cosmic-ray collisions per minute and send the data back to the Earth for the cosmic particles investigation. Several institutions in Taiwan take parts in the project including Chung-Shan Institute of Science and Technology, Academia Sinica, National Central University, National Space Organization (NSPO), etc. Among these institutes, Chung-Shan Institute of Science and Technology is in charge of the significant electronic system, which transforms the collected cosmic data into electronic signals and deliver the signals back to the Earth.

The principal investigator of AMS is Nobel laureate particle physicist Samuel TING, who is also an Academician at Academia Sinica. The international cooperation project includes scientists from 16 countries. The project, aiming at particles studies and the searching for antimatter as well as dark matter, is regarded as an endeavour of looking for the proof for the Big Bang theory.

The testing result of the AMS-01 mounted in a space shuttle in 1998 has already suggested that the spectrometer is highly potential for particles studies. According to the project plan, AMS-02 will not stop operating on ISS until 2020.

<http://web1.nsc.gov.tw/techwp.aspx?id=1000523001&ctunit=208&ctnode=287&mp=7>

### 16. Invisibility Cloak Might Be Possible! Taiwan Scientists Unfold the Secret of Cuttlefish's Camouflage

(MEPO Forum, 24 05 2011)

How the color-blind cuttlefish changes the color of the skin in response to the environment in order to hide itself from the enemy has been a biological mystery for a long time. Professor Chuan-Chin CHIAO at the Department of Life Science, National Tsing Hua University, tries to unfold the mystery by simulating the first non-human visual experience from the perspective of fish and discover that within the visible range the squid skin has similar reflectance spectra to those of the natural environment, which enables cuttlefish to change the surface color for camouflage. The findings have been published in *Proceedings of National Academy of Sciences of the U.S.A.*, PNAS on May 16 issue.

<http://web1.nsc.gov.tw/techwp.aspx?id=1000524004&ctunit=208&ctnode=287&mp=7>



### 17. Taiwanese scientist wins 2011 Nikkei Asia Prize

(Central News Agency, 25 05 2011)

A Taiwanese physicist was honored as one of the winners of the 2011 Nikkei Asia Prizes Wednesday in Tokyo. Wu Maw-kuen, Director of the Institute of Physics at Academia Sinica, won the award in the "science, technology and innovation" category for his discovery of a chemical substance that has resulted in a vastly improved superconductivity research environment.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aALL&ID=201105250044](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aALL&ID=201105250044)

### 18. Asia University perfects means of cultivating snow fungus

(Liberty Times, 25 05 2011)

Taichung City's Asia University has developed the world's only automated environmental control system for the cultivation of *Tremella fuciformis*, allowing for toxin-free and multicolored snow fungus. Lin Chien-yih, former director-general of the government's Agricultural Research Institute and now doubling as dean of the university's College of Health Science and head of its Medicinal Mushroom Research Center, led a research team working four years on the project. Lin said snow fungus contains large amounts of polysaccharides, including xylose, mannose and glucosone, with many features conducive to good health. In addition, it has anti-cancer properties and is useful in weight loss and skin care. It also helps prevent constipation. Snow fungus is edible and can be used for medicinal and cosmetic products. The university has already transferred the technology to the private sector, which is working on extracting the polysaccharides for use in a variety of products that are expected to reach the market next year.

<http://www.taiwantoday.tw/ct.asp?xItem=165358&ctNode=445>

### 19. Taiwan researchers develop nanomaterial for gas detectors

(Taiwan Today, 25 05 2011)

Two researchers from National Chung Hsing University have developed a nanomaterial that can be used to make advanced electronic gas detectors to save lives.

NCHU said that associate professor of physics Watson Kuo and chemistry professor Lin Kuan-jiuh studied a nanowire of radicals-containing vanadium oxides and found the material's charge conduction to be highly sensitive to different gas exposures. "The gating effect by the adsorption and absorption of different gas molecules can be applied to develop environmental monitoring devices such as electronic noses," Kuo said. The researcher explained that the interlayer diffusion of gas molecules prolongs the gating effect, allowing the material to "memorize" the gases one to two hours after the initial contact, a distinctive feature compared with most existing devices. "If combined with wireless technology, the material can be employed to conduct remote detection of hazardous gases such as carbon monoxide," he added. Experiments show that the nanomaterial can effectively detect oxygen and nitrogen, Kuo said. The material might be able to detect other gases if different radicals are added to it, he said. The results have been published in the 18 March edition of *Nanotechnology*.

<http://www.taiwantoday.tw/ct.asp?xItem=165419&ctNode=445>

<http://web1.nsc.gov.tw/techwp.aspx?id=1000524005&ctunit=208&ctnode=287&mp=7>

### 20. Academic claims wild grass could meet Taiwan's energy needs

(Taiwan Today, 26 05 2011)

Taiwan provides an ideal habitat for *Miscanthus*, a species of wild grass considered a good source for alternative energy, and should capitalize on that advantage, an evolutionary biologist said at a National Science Council news conference on 25 May. "The genetic diversity of *Miscanthus* in Taiwan has given us great strains of the grass, including some that are heavy metal and salt tolerant," said life science professor Chiang Tzen-yuh of National Cheng Kung University. "We have also identified a host of useful genes that have drawn international attention." According to a recent Irish study, Chiang said, between 9-10 % of Europe's energy needs could be supplied by *Miscanthus* if 10 % of all agricultural land on the continent were devoted to producing the wild grass.

Given Taiwan's biodiversity, he suggested the NSC establish a platform for genomic analysis of Taiwan's bioresources so as to boost development of the nation's biological and agricultural sciences.

<http://www.taiwantoday.tw/ct.asp?xItem=165601&ctNode=445>



### **21. Academia Sinica Scientists Discover How A Plant Virus Hitches a Ride to Cross the Cell Boundary**

(MEPO Forum, 28 05 2011)

The spreading of Potexvirus through the plant intercellular junction plasmodesmata requires the triple-gene-block (TGB) proteins. TGBp3 is a small transmembrane protein featuring to target TGBp2 and forms peripheral puncta in close proximity to the plasmodesmata. The nature and importance of the peripheral puncta, however, have long been a mystery. The research results of Dr. Chao-Wen WANG's group have been published in the *Journal of Cell Biology* on April 25, 2011 and in the May issue of *Nature Reviews Microbiology*.

<http://web1.nsc.gov.tw/techwp.aspx?id=1000528007&ctunit=208&ctnode=287&mp=7>

### **22. Department of Biochemical Science and Technology Presents New Nano-Material Treatment for AMI**

(MEPO Forum, 30 05 2011)

Professor J.A. HO at the Department of Biochemical Science and Techonolgy, National Taiwan University, combines high polymer nanomaterial technology and stem cell technology presenting a new treatment for acute myocardial infarction (AMI) which is a therapeutics based on stem cells as well as a measure to trace stem cells development. More significantly, the stem cells integrated with high polymer nanomaterials have been proved not to express their disfunction in differentiation. The therapeutics can treat and thus track the infarction together within 30 minutes, enhancing the efficiency of AMI treatment. The findings have been published in *Circulation* (2010 ; 122 : S132-141). Since the treatment has showed that nano-materials can be applied to the treatment of cardiovascular disease, it opens a promising sci-tech as well as medical opportunity.

<http://web1.nsc.gov.tw/techwp.aspx?id=1000516001&ctunit=208&ctnode=287&mp=7>

### **23. ARTC Wins Gold, Silver Prizes at 39th Inventions Geneva**

(GENS China Economic News Service, 31 05 2011)

Taiwan`s Automotive Research & Testing Center (ARTC) once again proved its outstanding development and innovation capability at the 39th edition of the International Exhibition of Inventions of Geneva (Inventions Geneva), held on April 6-10 in Geneva, Switzerland, taking both gold and silver prizes. ARTC won out over 750 other exhibitors from 45 nations, winning prizes for its active automotive safety systems including a vehicle rollover warning system and an image-type obstacle detection system. Officials of ARTC pointed out that both the award winners are advanced intelligent safety systems that help make driving easier and safer. The first can detect possible vehicle-rolling risks and pre-warn the driver, while the second uses a reverse camera to detect different obstacles and display them on an onboard monitor so the driver can avoid possible collisions.

[http://cens.com/cens/html/en/news/news\\_inner\\_36487.html](http://cens.com/cens/html/en/news/news_inner_36487.html)

### **24. First solar PV gas station opens in southern Taiwan**

(Central News Agency, 31 05 2011)

A solar photovoltaic (PV) -powered gas station in Taiwan, the first of its kind, started operation on 30 May The state-run oil refiner has invested NT\$ 5.14 million to build a solar PV energy system at the gas station, which is located at the Kenting area in southern Taiwan's Pingtung County. Others will follow.

[http://focustaiwan.tw/ShowNews/WebNews\\_Detail.aspx?Type=aECO&ID=201105310043](http://focustaiwan.tw/ShowNews/WebNews_Detail.aspx?Type=aECO&ID=201105310043)