

# NTU Newsletter

| NO.1 | 2007.06 |

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The National Taiwan University has had the longest history and has been the most representative of institutions offering comprehensive higher education in Taiwan. Since it was founded, the university has emphasized balanced development in four major fields: namely, liberal arts, social sciences, biological sciences and physical sciences. Its distinguished faculty, outstanding achievements in research, excellent learning environment and academic freedom have made the National Taiwan University the top choice in the minds of most graduates from senior high schools all over Taiwan. Our alumni who have eventually found themselves in all four corners of the world have shone in every field.

In 2005, the National Taiwan University was singled out for special government subsidy to support its efforts to achieve ranking among the top 100 universities in the world within five years. This move was in keeping with the policy put forward by the R.O.C. Executive Yuan. The National Taiwan University shall continue nurturing outstanding talents in different fields. Moreover, to become "an international university" will be its goal for it seeks to make global contributions and to broaden its sphere of influence.

Starting in June this year, the university will publish the "NTU Newsletter" every quarter to enable important international higher education, research and administrative institutions, the NTU's sister universities, as well as all foreign visitors who care about the NTU, to understand better the university's outstanding R&D performance, new educational directives, and its diverse and colorful campus activities. In our first issue, the "Special Report" section will focus on all the conferences where the outstanding academic achievements are presented. The "International Corner" will report on recent exchanges with well-known universities abroad. "Activities" will feature a round-up of major university happenings in the first half of 2007, such as the illusion exhibition during the azalea season and the NTU Arts Festival. "Honors" will report on the 2006 IEEE Fellow & ASME Fellow. Finally, the inaugural issue will introduce the Center for



Instructional Development.

Dialogues and interactions with the world are the university's first step towards going global. With the launching of this "Newsletter, the NTU reinforces its information exchange with the world at large, and at the same time strives to fulfill its goal in becoming a first-rate center of learning.

*President*

*Sichen Lee*

## NTU Holds Press Conference to Tout World-Class Research Results

In accordance with governmental policy and subsidized by grants from the Ministry of Education, NTU implements the “Project to Develop World Class University and Top Notch Research Centers.” In the 2006 Academic Year, NTU surpassed MIT and Stanford in IC design and nano-disc technology, achieving the goal of becoming “top among the Chinese, and No. 1 in the world.” And in the areas of cure for the common ills of hepatitis, cancer, and infectious diseases, the key research projects at the core labs of the NTU Research Center for Medical Excellence also have achieved major breakthroughs with far-reaching results.

### Excellence in Research (1)

#### NTU SOC Research Team Starts from Zero, and Ends up Heroes

ISSCC is the highest benchmark for thesis publication in the area of IC design. Compared with the performances of other first class universities from 2002 to 2007, the NTU SOC center has published a total of 33 theses in ISSCC, ranking No. 1 in the world, and far exceeding the 24 submitted by MIT, the 21 by Stanford, and the 12 by UC Berkeley. The 2007 statistics further indicate that the number of theses submitted by NTU for publication have surpassed those from many internationally renown research institutes such as IBM, INTEL and UCLA.

The achievements in research and development by NTU faculty members not only won critical acclaim in the international academic arena, but also contributed to the output of the computer industry in Taiwan. For the last two years the technological transfer funds from the SOC team of NTU took up 19% of all research project technological transfer funds of the National Science Council. This figure is concrete proof of the significant contribution made by the NTU SOC team to the computer industry in Taiwan. The convener of the



President Si-chen Lee giving a speech at the press conference.

SOC research team, Professor Liang-gee Chen of the department of electrical engineering noted that such an illustrious achievement was actually very hard to come by. Prior to 2002, Taiwan’s performance was largely ignored by international journals. But since the ministry of education began integrating research universities from 2002, and expanded the budget to NT\$ 50 billion over a five-year period in 2006, NTU research centers have received more abundant resources, which helped to bring about major breakthroughs. A case in point is the number of theses published in ISSCC, which spiraled from zero in 2002 to a total of 33 in 2007, ranking first in the world. Such a remarkable performance has led the Japanese media Nikkei Electronics to remark, “Taiwan’s momentum is on the rise, and all signs indicate that the momentum is not temporary.” President Si-chen Lee points out that the metamorphosis from zero to hero indicates that Taiwan does have the world’s best technological talent. The government’s subsidization and key development of higher education, though seemingly slow compared to other countries, is a pivotal factor in enhancing the Taiwan’s competitive edge.



Numbers can talk! The quantity and quality of the papers published in the field of SOC by NTU members fully demonstrate the outstanding achievements and research potentials of the university.

## Excellence in Research (2)

### 150GB super capacity optical disc technology puts Taiwan on top of the world

The optical storage industry is one of the most important lifelines of the photoelectrical industry of Taiwan. Its output accounted for more than 75% of the global output, the highest percentage in the world. Yet, owing to the lag in technical research and development, in the past industry members had to pay huge sums of royalty to foreign disc makers. This situation is soon about to change. The NTU nano optical storage research team has successfully developed a super-large capacity nano optical disc, with a storage capacity up to 150 GB, 30 times the capacity of current DVD discs. This is a major breakthrough in the optical recording technology, with amazing market values and economic benefits. It opens up a brand new frontier for the domestic disc industries, freeing them from the need to pay large royalties to foreign disc makers. The market value of this new technology is estimated to exceed NT\$100 billion.

The convener of the research team, Professor D. P. Tsai points out that the NTU optical storage team based their research on the findings of the industry/academic

cooperative plan sponsored by the National Science Council and the Ministry of Economic Affairs, and after receiving funding for the major equipments needed to conduct the research from the university's Pursuit of Excellence Project, the team was able to advance rapidly. It has developed the nano-analysis of near field optical disk, effectively narrowing the size of the record point to 90 nanometers (twenty times smaller than the smallest record point of current DVD's), thus greatly increasing optical density and recording capacity. So far the capacity of a single compact disc developed by the team is estimated to reach over 150 GB, even up to 200 GB, which is 30 times the capacity of regular DVD discs.

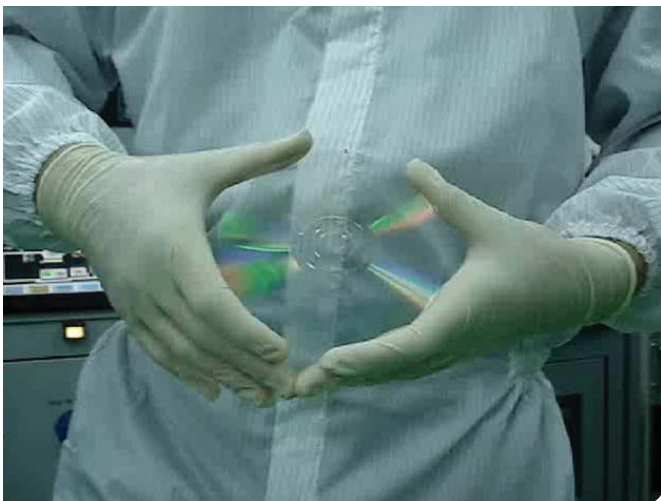
The timely involvement from industry, government, and academic institutions with the research and development of nanotechnology creates a good opportunity for the optical storage industry of Taiwan to transform and upgrade, freeing itself from the oppression of heavy royalties, and becoming technologically independent. For the time being, the achievements of the elite NTU nano optical storage research team are being actively integrated with the unique advantages of the existing domestic optical storage industry, and the results are expected to be very conducive to the creation of new products and increase in market value.

## Excellence in Research (3)

### New Knowledge and New Technology to Provide Cure for Hepatitis, Cancer and Infectious Diseases

The NTU Research Center for Medical Excellence is staffed with the best talent in medical research (including Drs, Ding-shinn Chen, Pan-Chyr Yang, and Pei-er Chen, all three of them Academia Sinica members, together with over 27 post-doctorate researchers). Coupled with multifunctional core facilities in genomics study, comprehensive teaching resources system and top-quality graduate students, over the past few years the Center has outstanding results in the study of hepatitis, cancer, and infectious diseases and has published an average of 40 articles in international medical journals every year. Related co-

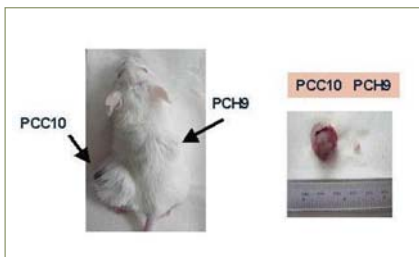
## ► Special Report



NTU optics team develops nano optical disc with massive 150GB capacity.

operation projects with the industry and patent applications have also been increasing year by year. The following are the most recent achievements of the core laboratories of the Center:

### Proteomics and Protein Function Core Laboratory:



The NTU Microbial Genomics Core Laboratory has successfully established the mice mode for continuous infection of chronic type B hepatitis. They discovered that substantial performance by HLJ1 genes effectively inhibits tumor growth. (Pictured here are photos showing the difference in tumor size)

the stomach. The use of “protein analysis platform” allowed the researchers to rapidly identify gastric cancer-related protein factors on a large scale, and the research results were published in the most representative journal on the subject *Molecular and Cellular Proteomics*. The research team now continues to conduct in-depth studies of the gastric cancer-related

protein factors in an effort to identify new targets for clinical diagnosis and treatment.

### Microbial Genomics Core Laboratory:

This laboratory has successfully established the mice mode for continuous infection of chronic type B hepatitis. This new discovery is instrumental in the clarification of the pathogenic mechanism, and leads to the development and evaluation of drugs and treatments.

### Gene Microarray Core Laboratory:

The Gene Microarray Core Laboratory has recently discovered a new tumor suppressant gene related to the type of lung cancer known as HLJ1. This newly found gene inhibits the growth of lung cancer cells while facilitating the regeneration and metastasis of blood vessels.

As a result, HLJ1 has become a new standard for the treatment of lung cancer. In the meantime, the research team has found the genetic factors of lung cancer, a discovery that allows doctors to predict the patients’ survival rate, and provides an important reference for the personalized treatment of lung cancer.

The emphasis of the Research Center for Medical Excellence now centers on the most prevalent illnesses found among Taiwanese people such as cancer and infectious diseases. The Center tries to utilize new knowledge and new technology in genomics medicine to solve the medical problems of the general populace. The development strategy of the Center is to use the core laboratory of genomics medicine as the platform to continue the study of cancer and infectious disease while delving into other important areas such as neural science, genetic diseases and stem cell studies. Future execution strategy involves exchange and cooperation with other related units within the university; actively bringing in new blood from abroad; developing international cooperation and academic exchanges on a large scale; continuing to introduce cutting-edge technology. The purpose in sum, is to expand the medical research of NTU into the international arena in pursuit of excellence.

## NTU and University of Illinois Co-implement Taiwan Biodiversity Summer Session on the Culture of Taiwan Biodiversity



In the signing ceremony, President Si-Chen Lee (standing) praises the cooperation between NTU and UIUC.

The NTU signed an academic exchange agreement with University of Illinois at Urbana-Champaign on March 15, 2007. Both parties agreed to strengthen faculty/students exchanges and visits in the cutting edge areas of agriculture, bioengineering, natural resources and environmental sciences. NTU will take the initiative by setting up courses on “Biodiversity and the Culture of Taiwan,” to attract UIUC faculty and students to enroll. The first group of faculty and students from UIUC is expected to come to Taiwan no later than May.

Dr. Chen Bao-ji, Dean of the College of Bioresources and Agriculture, pointed out that, to seek innovative developments in the fields of traditional agriculture, environmental resources and life sciences, and to cultivate interdisciplinary talents, NTU must actively promote academic exchange and cooperation with the world’s top universities. As a prelude to the bilateral exchange, Dr. Robert A. Easter, Dean of the College of Agriculture of UIUC, will be invited to visit NTU’s College of Bioresources and Agriculture in April for an evaluation tour. In August of this year, Dr. Jesse Delia, Director of International Programs and Studies of UIUC, will also represent UIUC to visit NTU’s College of Bioresources and Agriculture and College of Life Science.

Subsequent to these two visits, Dr. Chen Bao-ji will lead a group of faculty from both colleges to conduct an on-site tour of UIUC in September, discussing in detail possible exchanges with UIUC administrators in the fields of bio-resources, agricultural engineering, animal science, food science, forestry and crop science.

According to the signed agreement, UIUC will provide courses in agriculture and consumer economics, agriculture and bio-engineering, animal science, crop science, food science and human nutrition, mankind and community development, natural resources and environmental science, and life science, for NTU exchange students, and also provide master-level curriculum for NTU baccalaureates to pursue a master’s degree. In return, NTU will provide UIUC exchange students summer study courses and quotas in the regular curriculum.

In addition, after completing their junior year, NTU students will have the opportunity to finish their senior year at UIUC by taking courses that are sanctioned by NTU. If the students continue to complete master-level courses at UIUC within a year, they shall be able to obtain master degrees from both NTU and UIUC within five years.

## APRU Forum Probes “Benchmarking Asia-Pacific Universities in the Global Era: Competition and Collaboration”



Group photo of all APRU participants of this session.

On March 13, the National Taiwan University (NTU) and the Foundation for International Cooperation in Higher Education jointly organized the Association of Pacific Rim Universities (APRU) Forum at the 2nd Student Activity Center. “Benchmarking Asia Pacific Universities in the Global Era: Competition and Collaboration” served as the conference theme.

Delegates from over 25 famous local and foreign universities, including the University of California Berkeley and Tokyo University, met with the delegates from Taiwan. The lectures and panel discussions enabled them to share their experiences in higher education. Brainstorming took place to formulate concrete strategies toward becoming universities par excellence.

In addition to participating in the APRU Forum, the delegates attended APRU’s 4th annual Senior Staff Meeting, which the NTU organized for March 11 and 12. At the meeting, key activities for the coming year were discussed.

Dr. Shen Tung, director of the NTU’s Center for International Academic Exchanges, pointed out that the NTU broadened the channel for international educational exchanges by participating in the actual planning of various activities of the alliance.



Regent Lee Si-Chen presents Vice-Chancellor and principal of the University of Sydney Gavin Brown with a keepsake gold leaf painting in thanks for his contributions to the conference.

The Association of Pacific Rim Universities (APRU) is an organization of research-oriented universities in the Pacific Rim. Founded in 1997, it set for its goal the promotion and the enhancement of economic, scientific and cultural exchanges among Pacific Rim

nations. The current member institutions include 37 prestigious universities from countries such as the U.S., Japan, Australia, New Zealand, Taiwan, and China. The NTU is the only member university from Taiwan.

The NTU has participated fully in the various meetings convened by the APRU. It has also taken great pains to promote interaction and exchanges with other member institutions, and to publicize Taiwan’s achievements in higher education. In addition, it has sought to benefit from the experience of other schools in international affairs and education outreach programs, and has taken an active role in hosting a number of activities over the past years.



## Business School Students from NTU and USC Overcome Culture, Language Barriers to Solve Strategic Scenario

The college of management at NTU has initiated and hosted many events to foster global views and enhance students' competitiveness internationally. One recent event is the case competition among students from the Marshall School of Business, University of Southern California, and the NTU College of Management held on March 12, 2007.



An NTU-USC student duo team up to solve Harvard business school dilemma.

The event was conducted entirely in English, and the students from USC and NTU interacted with each other enthusiastically. Not only did our students get the chance to sharpen their English skills, they also had the opportunity to exchange ideas with their counterparts from abroad. In the end, two groups out of nine were chosen to be the winning teams. The NTU College of Management has provided many opportunities which students are able to gain valuable international experience outside the classroom.

Dr. Ming-Je Tang of the Department of International Business at the NTU College of Management, and Dr. Michael Coombs of USC were invited to be the judges in this competition. 36 USC Marshall School of Business students, and 26 NTU College of Management students participated in this meaningful event. The professors selected a Harvard Business School case, and the students must overcome the cultural and personal differences within a short time to come up with a strategy to solve the problem.



Dr. Timothy Chou and professor Ming-je Tang impressed with USC business students.

Students from both schools were able to develop personal friendships throughout and after the event. "Besides providing students with professional knowledge, the college of management at the National Taiwan University also encourages its students to seek opportunities to broaden their views and to maintain constant contact with the world, because a cosmopolitan outlook would bear the highest return on investment for students by enabling them to be more competitive" said Dr. Timothy Chou, the Associate Dean of NTU College of Management.

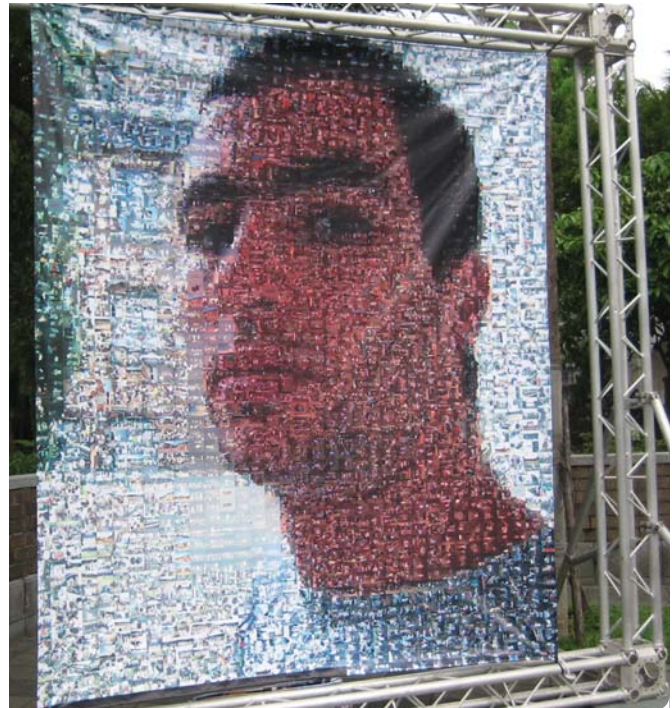
## NTU's 13<sup>th</sup> Arts Festival Offers New Initiatives for a Renaissance in Art

The opening ceremony of the 13th NTU Arts Festival of NTU was held in the evening of April 27th, and was attended by President Lee Si-chen and top administrators. The richness and diversity of events attracted many students and members of the general public. The activities, which lasted until May 11th and included performances by student associations, exhibitions of the installation art, lectures on art and literature, and DIY handicraft, are an ample indication of the university's creativity and vitality.

Held at the front gate of the university, the ceremony opened with President Lee Si-chen and top university officials cutting the ribbon and leading the guests in setting off firecrackers. The popping and crackling along with colorful showers of confetti marked the official launching of this year's festival.



A piece of Installation art named "I wanna be a common people."



Another piece of installation art entitled "My face as a ntu life." It was compiled from 2000 photos of student campus life which combine to form a large, unique face.

In his opening speech, President Lee emphasized the importance of the Arts Festival. He said that the festival not only served to inspire the imagination of the students, but also enhanced the artistic atmosphere at NTU. To stimulate even higher levels of creativity for this year's festivities, NTU enlisted the cooperation of the National Taipei University of education.

During the ceremony the ballroom dancing club, the sign language club, the talk and sing art club put on remarkable performances. An ingenious invention was the fun show called 'Homebody Makeover' the purpose of which was to completely alter the appearance of students who normally concentrate exclusively on their studies and neglect their looks. The show received

enthusiastic response from the audience. In addition, the ceremony included a solo performance by Wei Li-an, a freshman of the Department of Foreign Languages and Literatures and the seasonal champion of the popular TV variety show 'Campus Singers' and live acts by the famous bands "Totem" and "Tizzy Bac" which lent an air of street theatre to the occasion.

Apart from stage performances, the opening ceremony also featured such fringe activities as joint exhibitions by student associations and handicraft stalls, which attracted many students, faculty members and the general public. The cool evening drew throngs of people, filling the scene with bustle and excitement.



"The wall before the fall", is a piece of installation art on display at Zhou Shan Rd. The wall implies "protection" and "exclusion", and this piece of work is a record of the final moment of the wall before it was struck down.

Since 1995, the NTU has held the Arts Festival every year in May, putting on a series of art-related performances and exhibitions. The Festival has become an NTU tradition. This year happens to be the 13th year, and in order to counter any unlucky associations with the number "13," this year's Festival centers around the theme "Renaissance," with a view toward overturning the established authorities in art to effect a rebirth.

The festival's activities continued until May 11th, with a continuous display of various creative,



The Nationality Dance Club put up a duo dance number at the Opening Ceremony, displaying the exotic flavors of nationality dancing.

informative and artistic presentations. The organizers also set up innovative works of installation art on selected spots on campus. Each and every one who participated in the Festival helped to make it a resounding success.



At the creative market place, a student is seen immersed in creating a piece of handicraft.

**The Extracurricular Activity Division:**

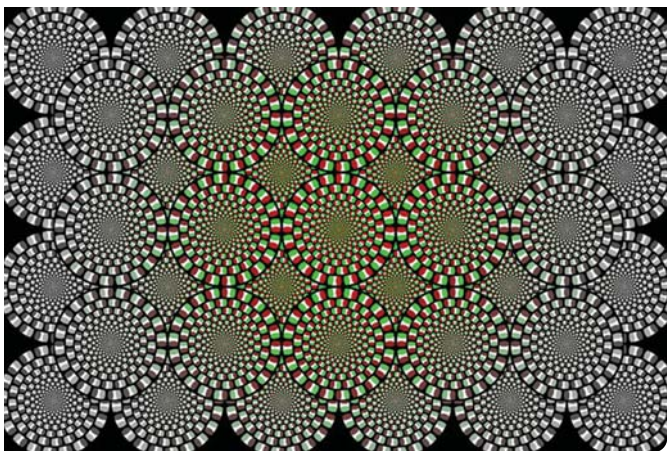
<http://homepage.ntu.edu.tw/~activity/new/act1/artfestival/artfestival.html>

**The Blog Site of the Festival:**

<http://www.wretch.cc/blog/ntuart2007>

## NTU's Azalea Festival "Illusion Show" on Exhibit in Main Library Starting March 17<sup>th</sup>

To See Is To Believe' is a truth that most people abide by, but there may be exceptions to the rule. The Azalea Festival's "Illusion Show", organized by the Psychology Department and the Neurobiology and Cognitive Science Center, was put on exhibit starting from March 17th for a full month in the Multifunction Room of the Main Library. Items on display include: "The Inclined House", "The Inverted World", "The Disappearing Trick", "Whose Hand Is This?" "Light Rays," "The Disappearing Dancer", "Mirage in the Mist", "The Multi-colored Snake," and "The Slanted Chinese Characters". There were also various types of interactive teaching that combine illusion and science, leading the spectators into a world of illusion full of fun, science, and artistry.



"Multi-colored Snake" creates the optical illusion of apinning serpentine patterns and outward drifting colors.

As Dr. Su-ling Yeh, Professor of Psychology and chief organizer of the Illusion Show pointed out, illusion is a phenomenon created by mistaking external objects for something else.

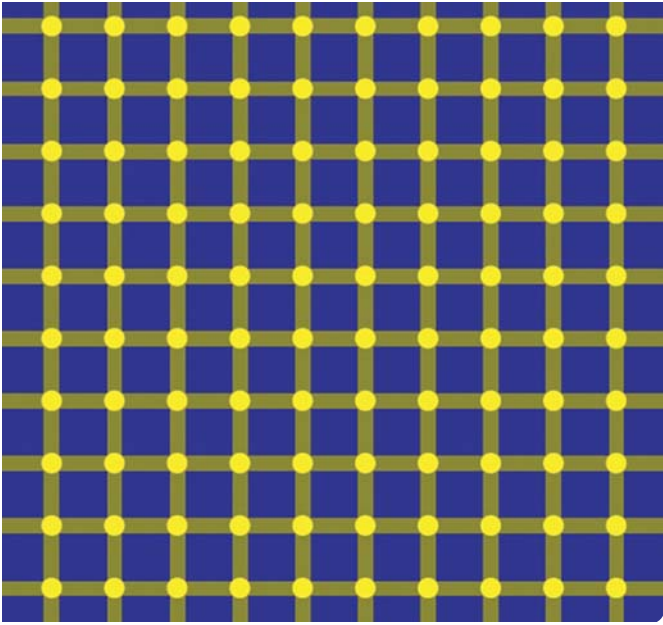
Illusions are not only fun in nature, they can be combined with science and art, and through an interactive method lead the spectators into a wonderful

world of the senses. In fact, many scientific studies about illusion stem from strong curiosity induced by illusions. Scientists want to know how the brain actually works to allow people to perceive the outer world. Many research papers on the topic have already been published in top-notch scientific journals such as Science and Nature.

In addition, art works created several hundred years ago contained elements of illusion. And a contemporary painter like Dali is known for his work that blends illusion into his creations. Therefore, when someone says, "This painting is very Daliesque", he implies that the painting is not only very modern, but also contains effects that are both real and illusionary. The two illusion shows created by Professor Shintsuke Shimojo in two Japanese museums were collaborations with the Japanese artist Tanaka Noriyuke. Features of the two shows included high quality visual beauty which meet the requirements of artistry.

Professor Shintsuke Shimojo of the California Institute of Technology is an internationally renowned scholar who has published various findings and research on illusion in the scientific journals Science, and Nature. He went one step further to transform his research achievements into displayable items, and had them put on exhibition in the two science museums in Tokyo and Shizuoka. In the science museum of Shizuoka, Shimojo's works occupy three whole floors and were put on permanent display. It was a very "hot" exhibition, attracting students to visit on holidays to the extent that they linger on the site without any thought of leaving. Shimojo's exhibitions are successful examples of the integration of science and education.

All the items on display in the current exhibition were designed by Professor Shimojo with assistance from the faculty and students of the Department of



This Hermann Grid creates the illusion of black dots jumping around inside yellow dots.

Psychology. The first five items were popular exhibits from the Japanese museums, whereas the latter five were specifically designed and adapted for the NTU venue, and were considered world premieres. Every display item was equipped with an interactive learning platform, allowing spectators to operate the controls on their own. In order to achieve the best effects, NTU particularly invited the Hollywood designer Shana Mabari, the famous Japanese artistic director Noriyuki Tanaka, and the internationally famous modern experimental dancer Hiroyo Kitao to come to Taipei to participate in the design and programming of the exhibition, so that the best multiple effects of art, science and education could be achieved. Hiroyo Kitao played the role of the disappearing dancer in the first two days of the show.

To complement the current exhibition, Professor Suling Yeh and Associate Professor Chen Chien-chung of the Psychology Department offered a special course on “The Theory and Practice of Illusions”, training students to understand different types of illusions and the theoretical foundations behind them. During the exhibition, two students from the course conducted daily guided tours and helped out in the interpretations. In addition, students were required to create their own works of illusion based on the theories they learned in

class. The best ones were put on display in the area marked “Student Creations.”

In addition, in the part dealing with “Illusion and Science: Interactive Teaching,” interactive methods were employed to introduce how studies in psychology, physics, and neuroscience about illusion contribute to science. This part was coupled with illusionary displays to introduce the works published in international scientific journals by Professor Shimojo, his collaborators, and the faculty and students of NTU.

## Introduction of Professor Shinzuke Shimojo



Dr. Shimojo is a full professor of the California Institute of Technology, and leader of Japan’s large scale research project on the latent functions of the brain. His main areas of specialization include human sensory functions, cognition, and the study of movements. The laboratory under his leadership is also known for its expertise in these areas, and has become the top research group of CIT capable of conducting in-depth research into human cognitive functions and neuroscientific topics. His team uses all kinds of high technology, including cranium magnetic stimulation, functional brain radiography, and electroencephalography in its research; and, in line with the classical teachings of psychology and physics, probes into topics related to illusion, surface signs, movements, attention, emotions, decision-making, infant development, and cross-sensory studies.

## NTU Professor Cheng Ming-syan Chosen 2006 ACM Fellow, Professor Cheng Kwang-cheng Elected 2007 IEEE Fellow

In November of 2006, Professor Chen Kwang-cheng of the Graduate Institute of Communication Engineering of NTU was elected fellow of IEEE (Institute of Electrical and Electronic Engineers) for his outstanding work in wireless broadband communications and wireless local area networks. In the same month, Professor Chen Ming-syan of the same institute had the honor of being elected fellow of ACM (the Association of Computer Machinery) for his excellent research on the topic "Contributions to Query Processing and Data Mining" The IEEE screens candidates for fellowship once a year, and the number of awardees is limited to one in every one thousand members. The screening process is a highly rigorous one.



Professor Chen Kwang-cheng.

In the area of wireless networks communications, Professor Chen distinguished himself by successfully combining research findings with real systems design and developed a novel theoretical analysis method from the wireless access protocol of declining channels. His theoretical analysis method is an invention that solves the problem of multiple access in wireless network communications. It broke the ground for quality assurance and can be further applied to multiple media wireless communications such as 3G CDMA.

Professor Chen successfully integrated theory and practice. His achievement filled the gap among theory-design-patent-product that has long existed between the communications and the chip designing industries in Taiwan. He designed a unique communication system structure by use of communications theory, which led to the development of the lowest power consumption chip in the industry, and was able to integrate apparatus such as antenna into the SD card. This technology has since become the benchmark for technical standard in the global wireless communications industry. Technologies developed by Professor Chen such as

802.11 (for indoor spread spectrum communications and infrared transmission), IEEE 802.15.2 (for co-existence at ISM band), and Bluetooth SIG (for adaptive frequency hopping) are widely adopted internationally and are considered to be forerunners in the global wireless communications technology development.

The ACM head office also announced that NTU's Department of Engineering Professor Chen Ming-syan was chosen 2006 fellow for his research on "Contributions to Query Processing and Data Mining." ACM established program in 1993, and selected fellows once a year. Among over 80,000 members, only about 20 people qualify for the honor. Until now, only about 20 Chinese scholars have been awarded this fellowship. Professor Chen was the first NTU professor to receive such a distinguished honor.

With the advent of the internet and the digital age, the use of informational technology has become increasingly prevalent. As the speed of transmission of digital data grows, the size of digital data increases by leaps and bounds. Consequently the importance of digital mining, which deals with the issue of shifting useful information from a large data base, has also been greatly enhanced. The academic society worldwide has labeled data mining as one of the most important technologies of the 21st century.

Professor Chen has also contributed significantly to the area of query processing. His proposed concept is useful in greatly increasing the query processing speed, and can prove very helpful in this day and age when internet applications are so prevalent.



Professor Chen Ming-syan.

## Congratulations to Applied Mechanics Professors Lee Chih-kung and Wu Tsung-tsong, Chosen 2006 ASME FELLOWS

Professor Wu Tsung-tsong and Professor Lee Chih-kung were both named 2006 ASME Fellows (American Society of Mechanical Engineers). Professor Wu was awarded the fellowship for his outstanding research on the topic "Ultrasonic Research and Nondestructive Evaluation (NDE) of materials." Professor Lee's experience at IBM's Almaden Research Center in San Jose, California, enabled him to conduct many important interdisciplinary research projects at the National Taiwan University's Institute of Applied Mechanics and win the ASME Fellowship. In its annual fellowship selection, the ASME singles out no more than 0.1% of its entire membership in an extremely rigorous process. ASME has more than 100,000 members worldwide.



Professor Wu Tsung-tsong.

Professor Wu completed his studies in the United States and returned to Taiwan in 1987. Since then, he has been engaged in fundamental and applied research into the fields of elastic wave dynamics and ultrasonic non-destructive evaluation. Professor Wu is also committed to studying the use of Laser Ultrasonics to test anisotropic material properties of composite materials.

Since 1980, Taiwan has gradually followed the footsteps of the United States and Japan to become one of the world's bases for quartz crystal oscillator industries. However this growth was not accompanied by a solid understanding of crystal vibration theory and analysis. In 1994, Professor Wu pioneered the first Surface Acoustic Wave Study and related core technologies while successfully applying a self-developed SAW different frequency dispersion analysis to the piezoelectric layer diamond surface acoustic wave filter design. Professor Wu's laboratory was the only

one in Asia, besides that of Sumimoto Electronics in Japan. Professor Lee Chih-kung, affiliated jointly with the Department of Engineering Science and the Department of Ocean Engineering, was also selected a 2006 Fellow of the American Society of Mechanical Engineers. His research include new piezoelectric sensor elements, piezoelectric transformers, surface plasma resonance and sub-wavelength nano-structure interaction with the laser, a lipid that could dissolve or render harmless such deadly viruses as the SARS or avian flu viruses, and blood analysis equipment based on Electrochemical theory. Any one of these research areas has the potential of achieving breakthroughs in global fundamental research. For example, by developing a new piezoelectric transformer power supply system through systems integration, Professor Lee has developed multiple new techniques capable of breaking through patent barriers in several countries, including a single piezoelectric transformer system integration technique. This technology has the potential to significantly improve the competitiveness of Taiwan's computer screen light source. Because of these research and development results, Professor Lee and his research team have won several domestic and international awards.



Professor Lee Chih-kung.

Professor Lee and his team are guided by the principle of working for the good of Taiwan and of the academic world in their creation of a new model of cooperation with industry. The fruits of their research also confirm that only multi-disciplinary applied science research could achieve innovative research results.

## Center for Teaching and Learning Development Seeks Full-scale Upgrading of Teaching Quality

As the pre-eminent university in the country, the National Taiwan University recruits students who are expected to become the future elite members of society. Therefore, it has to address the urgent responsibility of instructing and guiding students to equip them with the intelligence and maturity as well as open-mindedness of world citizens.

To achieve such an objective, the academic affairs division of the university set up the “Center for Teaching and Learning Development” on May 1, 2006. The center bases its work philosophy on “professionalism, service, trust, and encouragement.” By organizing seminar events, it provides teaching consultations, trains teaching assistants, promotes digital teaching and research curriculum reform, and among others, integrating the teaching resources of the university to enhance its teaching quality.

Work items under the Center for Teaching and Learning Development are given below :

### Seminars for freshman teachers

The center regularly organizes seminars for newly recruited faculty members. The purpose is to enable them to better understand the stratagems involved in the university’s policy: “Aim for the Top in Pursuit of Excellence.” It also serves to acquaint the recruits with such matters as classroom skills, research, services and personal rights related to their teaching careers. A typical seminar includes an introduction of the school’s vision, talks by the university president and senior officials on the pursuit-of-excellence policy, and a sharing of teaching experiences. Aside from inviting distinguished teachers to pass on their experiences, students are also asked to talk about their own concepts of a good teacher. In the area of academic research, a briefing on the university’s resources is given, while veteran teachers are invited to share their knowledge. The success of these seminars ensures that they will be held on a regular basis in the future.



Teachers Participate in the “New Teacher Conference” Held in Sitou in Sept. 2006

### The teaching assistant system

Since the 2006 academic year the university has officially launched the “teaching assistant system.” Teachers of common courses, general education courses, courses with large enrolments are eligible to apply for subsidies for teaching assistants. These are graduate students who help lead students in group discussions and experiments. To ensure the quality of teaching assistants, the Center for Teaching and Learning Development has organized the “teaching assistants’ research and study camp” to offer instruction in basic teaching skills. In the course of the semester, a workshop to share teaching experiences is held. Towards the end of the semester an evaluation of the assistants’ performance takes place and the outstanding ones are singled out for special citation. The teaching assistant system will revolutionize the conventional learning habit of students who “merely listen and not ask questions.” Besides, teaching assistants are positions filled in by graduate students of the university. Those who wish to commit themselves to a career in education, through the process of teaching and learning,



can train to become top-quality teachers in their own fields.

### Teaching Experience Workshop

In order to enhance the teaching skills of the faculty and teaching assistants as well as the sharing of experiences, this center held four workshops in the fall semester; namely, “Super Power Point Slide Editing Skills,” “How to “Teaching Theory and Teaching Skills,” and “Demo Teaching: What Is Life,” all of which are closely related to teaching. The sessions were conducted by distinguished veteran teachers with a passion for teaching, who are happy to pass on their knowledge, concepts and skills. Participants find the workshops most rewarding and look forward to similar seminars in the future.

### The teacher apprenticeship mentoring system (The Flying Geese Project)

Aside from holding the seminars for freshman teachers, the center calls upon those junior- and senior-level teachers wishing to improve their teaching quality to form teams to share their teaching experiences. The teams are formed once every semester, and covers a one-year period. The concept is to encourage senior teachers to help mentor their younger colleagues by imparting valuable insights and wisdom.

### The CEIBA Platform

The establishment of the “CEIBA” teaching platform is intended to make use of the integration of network information technology to design multi-module functions with the aim assisting teachers in lessons planning. In addition, it can also help build a “student-centered” learning environment and strengthen communication channels between students and teachers.



NTU Lab Holds Taping Chemistry Demonstration.

### The NTU speeches network

In order to preserve and broaden the use of the

contents of speeches, lecture series and seminar resources organized by the university, the center set up an NTU lectures network to enable students and faculty to access the contents regardless of time and place. Users can browse through talks in any given area and watch live broadcasts in order to further their own studies and research. To date, the website has accumulated over 200 films, and over 60,000 browsers have visited the website.

### Open learning space

Most of the prestigious universities abroad have set up Learning Commons to stimulate discussion among students and foster a climate for learning and inquiry. The center, with the cooperation of the library, has installed such an open space for learning in the basement of the main library building to provide a multi-function facility for students and faculty. It facilitates schoolwork discussions as well as consultations regarding lessons. The room is divided into the following four areas: The first is a conference room for group counseling and related activities; the second, a projection area for presentations of original visual creations; the third, a lounge for comfortable reading, Net surfing, small-size reading club or lesson discussion, and language exchange; and the fourth, a counseling area for individual schoolwork counseling.

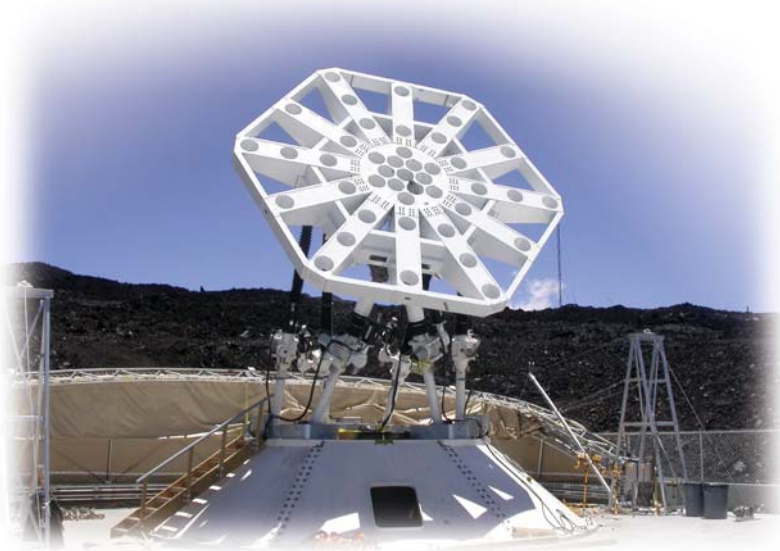
To stay competitive, the most urgent task for the National Taiwan University is the improvement in teaching quality. The institution has had a first-rate teaching tradition, which it hopes to perpetuate through the center’s efforts. Among its top priorities is to encourage faculty to become dedicated to the mission of nurturing young talent for the future development of the country, and to accelerate the creation of a high quality teaching environment and culture. Only then will the NTU be able to join the ranks of world-class institutions.



The study Group meets in the library.

## ▶ Event Highlights

# First Locally Developed Array Radio Telescope - Array for Microwave Background Anisotropy (AMiBA) Radio Telescope—Unveiled in Mauna Loa, Hawaii, on October 3, 2006



Elements of the interferometer array is sited on Mauna Loa in Hawaii.

Dr. Lee Yuan-tseh, former president of the Academia Sinica, and Dr. Lee Si-chen, president of the National Taiwan University, attended the ceremony to announce the completion of the first phase of construction of the world's first cosmic microwave background radiation array radio telescope. This was developed jointly by the National Taiwan University and the Academia Sinica. S.C. Lee, the NTU president, officially announced that the AMiBA was named the "Yuan-tseh Lee array for microwave background anisotropy" in honor of the nobel laureate.

The state-of-the art telescope was jointly built by the Academia Sinica's Institute of Astronomy and Astrophysics (ASIAA), and the National Taiwan University's department of physics and department of electrical engineering. Designing highly sensitive radio telescopes that can detect faint radiation signals from the infant universe is a major challenge confronting today's astronomers, and the new radio telescope is the perfect tool to meet this challenge.

Another goal of the AMiBA radio telescope is to utilize the Sunyaev Zeldovich effect to study the distribution of high red-shift clusters of galaxies in order to better understand the primordial structure of the early universe. As there are very few precision observation devices that can use 3mm waves to collect Sunyaev Zeldovich effect data, the AMiBA should prove very competitive in its applications.

## "NTU Public Forum"

The National Taiwan University is the pre-eminent institution of higher learning in Taiwan. In order to promote social progress and enhance awareness of humanitarian concerns, this university organized an "NTU Public Forum" to encourage faculty members in different disciplines to provide their knowledge and wisdom in dealing with social phenomena and public issues. Their expertise in the fields of education policy, social welfare, water resources, environmental protection areas that are of grave concern. The forum was conducted through cross-college interactions and interdisciplinary dialogue in which feasible solutions to social problems were discussed. The commitment of the "NTU Public Forum" is to help set up a society with love and justice on the basis of intellectual enthusiasm and social compassion.



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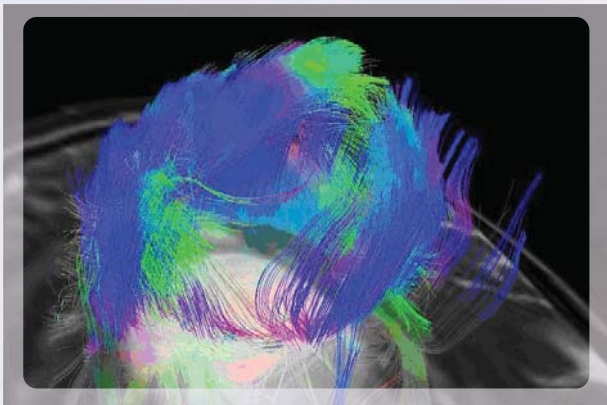
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# 1<sup>st</sup> Taiwan International Students Soccer Festival

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1. The Teams of Mingchuan University and Fu Jen Catholic University tried to outscore each other.
  2. After winning the championship, the Team of National Chengchi University uttered their cheers of victory.
  3. At the closing ceremony, foreign students, volunteer workers and NTU students gathered for an evening of fun and warmth.
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### BLUE TULIP

This is one of the winning pictures in the neuroscience section of the recently held "Second Annual Azalea Biomedical Image Contest". Numerous pseudo-colored nerve fibers reconstructed from diffusion MRI are seen surrounding a brain tumor of a patient. Courtesy of the Advanced Biomedical MRI Lab, NTU Hospital.

Web site : <http://neuroscience.ntu.edu.tw/photo/photo.htm>



Publisher : Lee Si-chen

Editorial Consultant : Fu Li-chen

Editor : Ku Lin-lin

Executive Committee : NTU Secretariat

Publish Place : National Taiwan University

Tel : 886-2-3366-3366

Address : No. 1, Sec. 4, Roosevelt Road, Taipei,  
10617 Taiwan

Website : <http://www.ntu.edu.tw/eng2007/>

Producer : Taiwan News