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# NTU

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## HIGHLIGHTS

### **Mystery Solved: Insecticide Responsible for Learning Disability of Bees**

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**Researchers Invent Paper  
Memory Printing**

**NTU, U of Bologna Sign  
Exchange Agreement**

**NTU Press Goes International**

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## From VP's Office

MING-JE TANG\*

All across the globe, leading universities enjoy substantial endowments they can utilize at will. Harvard University for one boasted an endowment approaching NT\$1 trillion in 2013, which averaged out to NT\$40 million for each Harvard student. In comparison, NTU's endowment grew to approximately NT\$1.8 billion in 2013, reaching a value of over NT\$50,000 per student. Though the tax systems overseas and in Taiwan are different, as are the lengths of the periods of building endowments, NTU has managed to accrue a significant volume of contributions and has pursued long-term, proactive investments in order to boost our fund's revenues.

Having just started to build our endowment, we have brought in nearly NT\$20 billion in the form of contributions over the last six years. Still, most of these contributions are targeted for specific purposes, such as Hon Hai Precision Industry Chairman Terry Guo's donation of NT\$15 billion to the College of Medicine for the establishment of a cancer center and biomedical engineering research. Consequently, the portion of the endowment available for the university to use as it wishes is insufficient. If NTU hopes to provide better salaries to its professors and meet its many needs for campus reconstruction, one cannot but worry about the endowment's current level of income.

NTU's finances are used for both research as well as educational purposes. As a result, I would like to encourage all students to extend their knowledge beyond the fields in which they major. The world is big and there is demand for all types of professionals. By taking advantage of elective courses outside of their departments, or the Creativity and Entrepreneurship Program, which encourages students to start their own businesses, NTU students should develop the impulse to actively pursue their ideals and cultivate their personal interests and life directions. This is what I see students most lacking at present.

I also hope that every NTU student will make a difference to create positive changes in society. Positive changes are initiated through exceptional leadership skills and a big dream. Here at NTU, we foster a wide range of lifelong skills and abilities to help students pursue their dreams. Besides helping students find their interests and life directions through their studies and developing their expertise in various fields, we believe that students ought to cultivate their ability to conduct independent thinking. The ability to gain precious insights to which others remain blind through the application of continuous observation and contemplation is a skill that cannot be learned in the classroom alone; rather, it is a skill that that must be cultivated through persistent practice.

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\* Tang served as NTU vice president from August.1.2007 to May.31.2014

# Interdisciplinary Efforts:



## NTU Research Team Solves Mystery of Disappearing Bees



**W**hy are bees disappearing? This conundrum has continued to baffle scientists for decades, and there is still no adequate explanation regarding the matter.

The honey bee industry makes up NT\$2.3 billion of Taiwan's annual output value, and bee pollination indirectly contributes NT\$20–30 billion to the nation's overall agricultural production each year. This is just in Taiwan, so imagine the widespread threat that the decline in bees poses globally.

had been the focus of previous studies, are the main cause for this large-scale disintegration of the ecosystem.

Aiming to gain a fuller understanding of how imidacloprid influences bees, the team found that when a worker bee ingests 50 ppb (parts-per-billion) of the neurotoxin, it instantly loses its ability to return to its hive, affecting the colony's ability to reproduce. As the dosage increases, the number of affected bees also grows.

However, when the same experimental model is applied to the larvae, an astonishing result occurs. According to Prof. Yang, imidacloprid has little effect on a larva's fatality rate, even when dosages that are fatal to imago (adult) bees are applied. Although the larva is still able to go through capping, pupa, and metamorphosis, dosages of as little as 10 ppb can affect the larva's learning ability after metamorphosis. In other words, Prof. Yang's research shows that the affected bees have not mysteriously disappeared; they have simply gotten lost as a result of neurological degeneration of their learning abilities and cognitive capacities.

This conclusion is of great significance as it offers the first proof that imidacloprid has a detrimental effect not only on bees but also on larvae. Additionally, the research further substantiates how imidacloprid residue of as little as 10 ppb can damage a bee's neurological system, which in turn, is the likely cause behind the bees' mass and rapid decline.

A special tracking device was created for the experiment, and interdisciplinary efforts were put into the design, construction, and operation of the equipment. Prof. Ta-Te Lin of the Department of Bio-Industrial Mechatronics Engineering combined laser track-mark technology with an image recognition system to help track the bees' activities, while Prof. Huei Wang of the Department of Electrical Engineering provided his expertise in radar and other advanced tracking technologies.

Prof. Joe-Air Jiang, also from the Department of Bio-industrial Mechatronics Engineering, used infrared technology to monitor the colony's activities and the bees' locations in order to maintain accurate experimental records. Prof. Yuan-Tay Shyu of the College Bioresources and Agriculture also played an essential role over the course of the research project.

The team's findings, which confirm that non-lethal doses of insecticide also affect adult bees, have garnered widespread attention in the international community. The team's reliance on interdisciplinary collaboration and cutting-edge technology also offers a novel approach to the study of bees around the globe. NTU will continue to investigate this problem in order to contribute to the maintenance of ecological balance.

To address the problem, researchers from the Department of Entomology, Department of Bio-industrial Mechatronics Engineering, Department of Electrical Engineering, and the College Bioresources and Agriculture formed an interdisciplinary research team, which after seven years of collaborative effort, announced its important findings at a press conference on April 14.

Previous studies have confirmed that the use of insecticides has led to the mass disappearance of bees, a phenomenon known as Colony Collapse Disorder. Building on this premise, Prof. En-Cheng Yang of the Department of Entomology led the research team in focusing on the relation between bee behavior and an insect neurotoxin known as imidacloprid, a common substance in nicotine insecticide. According to the findings, neurological changes in the insect's learning ability, rather than its high fatality rate, which

# iNSIGHT Launches Three-Year User Experience Research Project to Boost Energy Conservation



◀ iNSIGHT's UX Guidebook will help the government and businesses develop energy-saving products and services.

With the catastrophic consequences of global warming occurring with increasing frequency, energy conservation and carbon reduction have become major issues that the people of Taiwan must confront. In the present environment, a look at the nation's energy-related research reveals that the majority of research is based on traditional ways of thinking. Oriented toward the output of technology, it aims at such goals as boosting energy transformation efficiency, developing renewable energy, and advancing carbon capture and sequestration technologies. Government planning pertaining to the development of energy technologies generally takes technology as its prime consideration, as well. As a result, we rarely see development and application strategies that are focused

on user demand, a concept centered upon understanding the person or technology user's experiences.

In view of these circumstances, iNSIGHT (the Center of iNnovation and Synergy for IntelliGent Home and living Technology) launched a three-year research project in April focused on user experience research, a field in which Taiwan lacks specialization. The goal of the project is to enhance both the public and private sectors' understanding of the end user's behavior and demands in terms of energy usage. The project also aims to compile a UX Guidebook to which the government and private business can refer in developing energy-saving products and services.

iNSIGHT's user experience research project is designed around three core aspects of energy-saving products and services: user experience, innovative design, and user experience principles.

First of all, through its user experience research, the center aims to discern the types of energy users and their behavioral traits so as to formulate energy user profiles. The establishment of the user profiles will help government policymakers gain a better understanding of the focus and directions of



▲ iNSIGHT's user profiles



the policies they implement. The profiles will also help businesses identify target markets and designate research and development directions.

Using a number of innovative design exercises, the project will also develop innovative processes as well as design principles and guidelines for energy-saving products and services, while producing a selection of prototypes of innovative products that show potential. The processes of innovation formulated through the project can be offered to businesses so that they will be able to follow standardized processes in order to replicate successful innovation experiences.

Last but not least, the fully-tested user experience design principles and guidelines will provide businesses with specific instructions to refer to when designing energy-saving products. They will help businesses apply suitable user experience concepts and approaches that ensure products will provide positive user experiences, thus raising the market acceptability of the products.

The abovementioned user experience research accomplishments, innovation processes, user experience principles, and application approaches and stages will all be compiled into the UX Guidebook.

In the past, the lack of understanding of energy user demands and user behavior witnessed in government energy technology and policies as well as in the business community resulted in the production of numerous energy technology research accomplishments that failed to connect with the public, wasting enormous research resources in the process. iNSIGHT, as a result, will use its research results to enhance the Taiwanese public's acceptance of energy-saving products, services, as well as government policies. It is hoped that the project will help the public carry out a truly energy-conserving lifestyle while boosting the energy-saving industry's overall value.

## Down Syndrome Prevention Achieves 90% Prenatal Detection

*Below, Prof. Fon-Hon Hsieh of the College of Medicine speaks about the success of Down Syndrome prevention in Taiwan during his 40-year career at NTU.*

Not long ago, a McDonald's restaurant in Kaohsiung City refused to serve a 40-year-old female diner with Down syndrome, provoking popular outrage and drawing society's attention to the plight of people with Down syndrome and their families. Down syndrome has been among the main foci of my four-decade career at NTU, and NTU has served as the base from which I have achieved wide success in the prevention of Down syndrome in Taiwan.

Down syndrome is neither preventable by vaccine nor curable after birth, and the only approach to prevention was through a prenatal diagnosis of the amniotic fluid. The extraction of amniotic fluid requires the performance of amniocentesis, which means inserting a needle into the abdomen during the fourth or fifth month of pregnancy. More than thirty years ago, this procedure was widely unaccepted; therefore, the percentage of older pregnant women undergoing amniocentesis sat at 7.5% in 1988. With the advancement of medical technology, this figure climbed to 75% by 2000 and has already reached 90% in recent years.

Meanwhile, the introduction of more advanced amniotic fluid screening methods in recent years has boosted the Down syndrome detection rate from 70% to 80%. Also, a new non-invasive prenatal serum screening test provides 100% accuracy.

In Taiwan, neither of the two prenatal screening methods is fully covered by the National Health Insurance, therefore market mechanisms were adopted in order to induce doctors, testing clinics and testing agent suppliers to promote these important prenatal screening mechanisms. This market approach has facilitated the success of Down syndrome prevention, while saving the government money.

In 2012, prenatal screening discovered 309 cases of Down syndrome in Taiwan, while 39 babies were born with the disorder. This calculates into a prenatal detection rate of 90%.

Nonetheless, many people with Down syndrome in Taiwan have entered adulthood and middle age, creating increasing burdens for the parents who care for them. As Down syndrome is often accompanied by early dementia, caregivers face ever growing difficulties as they themselves get older. The recent incident at McDonald's highlights this problem, and while great efforts have been put into its prevention, we remain waiting for the government to place more emphasis and resources on the issue.

# *NTU Distinguished Chair Professor Bor-Ming Jahn Awarded Geological Society of Japan 2014*

**N**TU Alumni and Distinguished Chair Professor Bor-Ming Jahn was awarded the 2014 International Award of the Geological Society of Japan (JGS) for the decades he has contributed to the field of geological research. JGS was established in 1893 and has since been dedicated to the advancement of geological research. The annual International Prize is awarded to individuals who have made innovative contributions to the development of geology in Japan or have engaged in impacting cooperative efforts with Japanese geologists.



Prof. Bor-ming Jahn is known for his groundbreaking and innovative work on the evolution of continental crust using the principles and techniques of isotope geochemistry and geochronology. He is a recognized world leader in these research fields and has made outstanding contributions to the geoscience community in Japan through research exchanges, technical training, and academic cooperation.

Prof. Jahn graduated from NTU in 1963, earned a master's degree at Brown University in 1967, and completed his PhD at the University of Minnesota in 1972. He worked at NASA (1972–1974) and the Lunar Science Institute (1974–1976) in the United States; served as a professor in France's Université de Rennes 1e (1976–2003); and returned to Taiwan where he served as Chair Professor at NTU (2003–2004) and then was chosen as the Director of the Institute of Earth Sciences (IES), Academia Sinica (2004–2010). After his retirement from Academia Sinica, he was appointed as Distinguished Chair Professor at NTU (2010–present).

Throughout his long, illustrious career, Prof. Jahn has published innumerable scientific papers and special volumes. He was ranked among the most highly cited authors in the Thompson-Reuters Web of Science 2013. Prof. Jahn has elevated the profile of Asian geology as Chief Editor of the *Journal of Asian Earth Sciences*, providing a world-class venue for Asia-based researchers to publish their work; and he also serves in an editorial role for seven other Science Citation Index (SCI) journals. In addition to the JGS International Award, Prof. Jahn has received numerous other accolades from prestigious academic institutions and societies for his accomplishments.



## NTU Wins 2014 OpenCourseWare Excellence Award for "Outstanding Site"

*NTU is dedicated to promoting quality online education and once again our efforts have garnered international acclaim. Aside from offering four of the world's most popular Chinese-language Massive Open Online Courses (MOOCs) on Coursera, NTU has also been listed as one of this year's winners of the 2014 Site and Course Awards for OpenCourseWare Excellence (ACE).*



wide selection of other popular courses. The site receives a monthly average of approximately 130,000 visitors, with the majority of the demographic distributed among Chinese-speaking communities in such locations as Taiwan, China, and Hong Kong.

Some of our most popular courses include Sociology of Love, Calculus, Introduction to Phonetics, Globalization: Challenge and Response, Red Chamber Dreams, and Organic Chemistry. Spanning a wide variety of fields of knowledge, from political science and the arts and literature to science and technology, NTU's diverse offering of OCW courses taps into a broad spectrum of topics covering a full array of disciplines. This is not only a demonstration of our soft power in terms of education and research; it also exemplifies NTU's accomplishments in promoting comprehensive and accessible educational opportunities for all.

The annual ACE Awards is organized by the OpenCourseWare Consortium, and the selection committee includes educators and open education advocates from around the world. This year's list of winners was announced on April 14, and the awards ceremony took place in Slovenia on April 24. The complete list of this year's winners can be viewed on the OpenCourseWare Consortium website.

NTU's OpenCourseWare website was selected as an "Outstanding Site" along with Spain's National University of Distance Education and Delft University of Technology of the Netherlands.

NTU's OpenCourseWare (OCW) program was established in 2010 and currently offers 134 courses. The program includes a core curriculum (required courses), featured courses (elective courses), classics, and a

To see the list of winners, please go to the **OpenCourseWare Consortium website**.



# NTU Signs Student/Faculty Exchange Agreement with University of Bologna



**N**TU signed an agreement covering student and faculty exchanges with the University of Bologna in March. The agreement marks the first university-to-university student exchange program between NTU and an Italian university.

NTU established partner-university relations with the University of Bologna in 2008. Founded in 1088, not only is the University of Bologna officially recognized as the world's oldest continually operating university; it is also ranked as having the best academic reputation among Italian universities. In addition, the Italian university boasts the largest student enrollment of any university in Europe, with over 81,000 students in its 11 schools.

Previously, NTU, working through the student exchange programs of the European Union's Erasmus Mundus Programme as well as the NTU College of Management, has sent a number of NTU students and faculty members to study and pursue research in Italy at the University of Pisa and Bocconi University. Under the exchange agreement signed with the University of Bologna, NTU plans to send up to three students to Bologna each year regardless of their disciplines. This opens up more opportunities for NTU students to study at European universities.

As for faculty exchanges, NTU and the University of Bologna expect to select a number of faculty members each year for exchange visits. Targeting existing cooperation plans and newly-developed fields, the exchanges will strengthen interaction between the two universities.

The University of Bologna is the fourth European university with which NTU has signed a direct university-to-university faculty exchange program. NTU enjoys similar agreements with the University of Hamburg and Heidelberg University in Germany and Saint Petersburg State University in Russia.

NTU has been working aggressively to develop cooperation plans with European universities in recent years. In addition to targeting universities in France and Germany, with which NTU has cooperated more frequently, the university is also exploring the feasibility of cooperating with universities in Spain, England, Switzerland, and Italy, which are popular with students, and in Eastern Europe and the Baltic states, which are drawing greater interest from students.



▶ LTTTC Executive Director Jessica Wu introduces the center's foreign language testing accreditation resources.

## *OIA Hosts Internationalization Seminar for University International Affairs Personnel*

The Office of International Affairs hosted the International Affairs Staff Seminar for personnel from international affairs offices at universities around Taiwan and the Language Training and Testing Center (LTTTC) on April 25. The seminar was designed to promote the exchange of administrative experiences as well as the sharing of foreign language testing accreditation resources. NTU's Dean for International Affairs Dr. Luisa Shu-Ying Chang and Associate Dean for International Affairs Dr. Bennett Fu presided over the meeting, sharing their administrative experiences at NTU and addressing the difficulties and challenges that higher education institutes in Taiwan face in the promotion of internationalization.

Using NTU's path to internationalization as a standard for higher education in Taiwan, Dean Chang opened the seminar with a speech that presented a comprehensive

introduction to NTU's strategies and approaches for the promotion of international affairs. Chang's introduction covered such topics as student and faculty exchanges, administrative visits, the signing of agreements, exchange students and international student admissions.

The OIA and LTTTC work as close partners in the promotion of the center's language proficiency accreditation programs. The LTTTC develops and administers the General English Proficiency Test for English and the Foreign Language Proficiency Test for Japanese, French, German, and Spanish, which have both been accepted by NTU partner universities as certification of language proficiency for NTU students hoping to study overseas through the university's exchange programs. As a result of the OIA's promotion of the GEPT, 64 universities in 22 countries already accept GEPT certification for admissions. The OIA hopes that other universities in Taiwan will follow NTU's lead by promoting the GEPT to universities around the world.

During the seminar, the OIA also discussed its summer programs, which it promotes as an important aspect of NTU's internationalization. Finally, the later portion of the seminar was occupied by a general forum presented by international affairs administrators from different universities in Taiwan.

# NTU Press Leads Seven University Publishers in Going International



▲ Scholars attending AAS's 2014 Annual Conference peruse books displayed by NTU Press and National Taiwan Normal University Press.

National Taiwan University Press led seven Taiwanese national university publishers in holding a joint book exhibition during the Association for Asian Studies 2014 Annual Conference in Philadelphia during March 28–30. Building on the momentum they accumulated through their joint exhibition at the 2014 Taipei International Book Exhibition in February, the seven university publishers organized the joint exhibition in order to go international and share their outstanding academic publications with a global audience. The AAS exhibition was the first joint book exhibition these university publishers have organized overseas.

In addition to NTU Press, the other publishers were National Sun Yat-sen University Press, National Central University Press, National Chiao Tung University Press, National Tsing Hua University Press, National Chengchi University Press, Taipei National University of the Arts Publishing Section, and National Taiwan Normal University Press.

Established in 1941, the AAS is a non-political, non-profit international academic society focused on Asian studies. With more than 8,000 members, the AAS is also the largest scholarly organization devoted to Asian studies. The association holds its annual conference as well as book exhibition over three days each spring in North America, drawing the interest and participation of leading international academic researchers and publishers in the field of Asian studies. This event is an opportunity that university publishers focused on academic publications in Asian studies must not pass up, and this year it served as the perfect venue for the publishers of national universities in Taiwan to show off their world-class publications to an international audience.

During the AAS exhibition, the seven publishers displayed books covering a range of Asian studies topics, including literature, history, philosophy, social science, and art. Among the works presented by the NTU Press, *Slow Reading of Wang Wen-hsing*, a major seven-book series published at the end of 2013, the *History of Chinese Thought Series*, and the *Japanese Studies* collection drew the most attention at the exhibition.

▼ A Lifeguard Club assistant coach hands four kilograms of bricks to a life guard trainee who must swim 1,000 meters.

## Campus Scenes



### Lifeguard Club Builds Fortitude and Friendship through Brutal Training

*"Flag team! One, two, three!"*

With the setting sun illuminating the swimming pool, those startling commands turn out to be the NTU Lifeguard Club engaged in a strenuous training session of its life saving course. Held in May and September each year, the course is a major event on the club's annual calendar. The three-week training course is not limited to NTU students and faculty members, hence many members of the public who are interested in life saving, including high school students and middle-aged office workers, are attracted to the program.

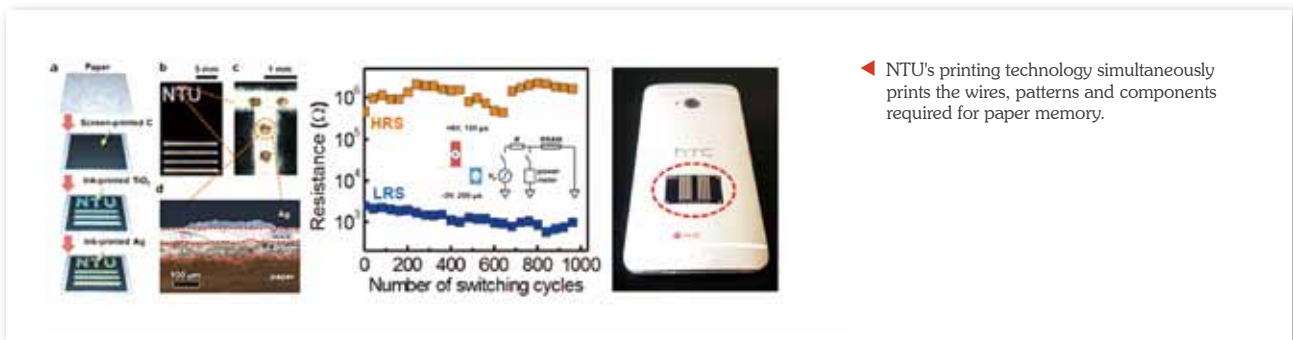
"Swim faster! Keep your feet off the ground!" The coaches at poolside shout strict commands while keeping their eyes on the students to make sure they carry out the instructions to the letter. The requirements of the life saving course are equivalent to brutal

army training according to club captain Ching-Ting Huang, who exclaims with a laugh, "You've caught me looking my worst!" The daily menu of basic physical training provides two meals a day, a dinner and a late-night snack. They include the head-up front crawl, breaststroke, sidestroke and backstroke, as well as swimming 1,000 meters while carrying four kilograms of bricks. These unsavory meals build up the endurance and fortitude to face real life conditions.

Head coach An-Chi Hsieh says, "The life saving course is not at all fun and games. High pressure must be imposed when training the students as the slightest lack of caution can lead to danger, especially in open waters. Consequently, in the heart of every life guard is the belief that saving oneself is more important than saving others."

All the members of the Lifeguard Club take on the program's challenges with passion and delight, and the shared experience of meeting the challenge of the harsh training sessions fosters a deep and profound friendship among the club members.

# NTU RESEARCH TEAM CREATES METHOD TO PRINT PAPER MEMORY



*Integrated circuit boards, though indispensable to our daily lives, require complicated manufacturing processes. Imagine being able to print an IC board in the comfort of your own home. Sounds impossible, right? Not anymore, thanks to an innovative research conducted at NTU.*



This study's objective was to find a cost-effective way to produce convenient and sustainable IC boards. Focusing on materials, the researchers realized that paper—portable, dissolvable, foldable, recyclable, and most importantly, affordable—was an ideal substitute for traditional silicon and plastic IC boards.

So how is this possible? Key advances in the technological development of active

and passive electronic components resolved initial concerns over paper's properties. However, devising a memory component was the next crucial step necessary for paper to function as an electronic component. Now NTU has made a major breakthrough in the study of paper memory.

The study, entitled "Paper Memory by All Printing Technology," was conducted by Prof. Jr-Hau He of the Graduate Institute of Photonics and Optoelectronics, Prof. Ying-Chih Liao of the Department of Engineering, and Prof. Lee Si-Chen of the Graduate Institute of Electronic Engineering. The study's principal researcher, Der-Hsien Lien, devoted his multidisciplinary knowledge of electronics, materials, and chemical engineering to successfully complete this research.

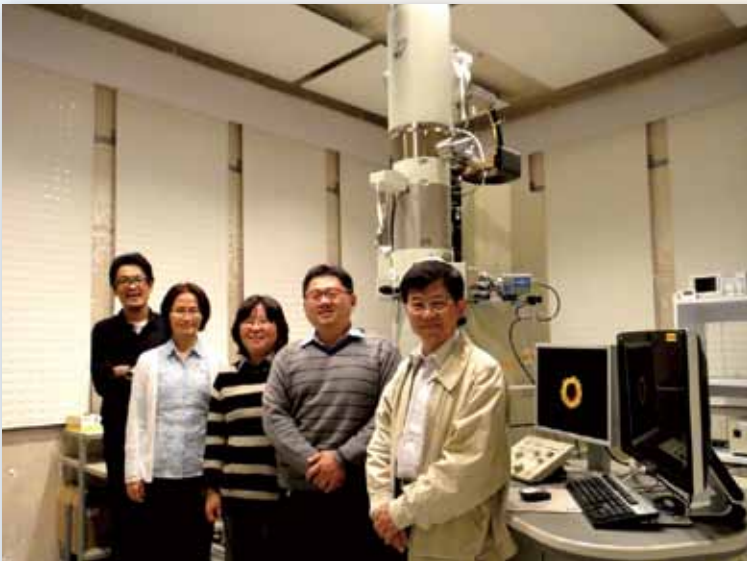
Using an inkjet printer, a three-layer nonvolatile resistive memory structure capable of multiple resistive switching is printed onto paper. An inkjet printer's capacity to simultaneously print the wires, patterns, and memory components cuts the production time by half. The traditional method of producing circuit boards is, in comparison, far less efficient in terms of time, material, and energy consumption.

This breakthrough technology is expected to vastly expand the scope of 3D printing to include the production of functional electronic components. It can be applied in the production of memory stickers that can be easily attached to any electronic appliance, such as cell phones, batteries, or even the human body.

**In the future, applications of this technology may include a wearable electronic component, a paper electronic component, or possibly a direct memory upgrade component for consumer electronic products.**

# Research Achievements

## Condensed Matter Team Publishes Breakthrough in Oxide-Interfacial Charges in *Nature Communications*



▲ The CCMS team comes together for a group photo in front of their transmission electron microscope.

led by associate research fellow Ming-Wen Chu and research fellow Jauyn Grace Lin, the study discovered that one-dimensional electrons occur from a misfit dislocation defect in two-dimensional interfacial charges. The paper, entitled "Condensation of Two-Dimensional Oxide-Interfacial Charges into One-Dimensional Electron Chains by the Misfit-Dislocation Strain Field" was accepted for publication on April 14 and is the first in its field to present such a discovery.

The achievements in the study of semiconductor technology are some of the most significant scientific breakthroughs of the 20th century. Ranging from semiconductor transistors and nano-integrated circuits, the technology of semiconductor interface has been extensively applied to electronic appliances and has had a widespread impact on our everyday lives. This success is attributed to the fact that, for the past 60 years, scientists have developed a controlled understanding of how strains and defects impact two-dimensional interfacial charges in semiconductor technology.

In 2002, the accidental discovery of the same interfacial charges in oxide-interfacial charges opened up new grounds for research on

*NTU's Center for Condensed Matter Sciences (CCMS) published its latest breakthrough research on one-dimensional oxide-interfacial charges in the internationally acclaimed scientific journal Nature Communications.*

oxide interface in the field of condensed matter science. As a result, oxide electronics soon became a core subject of condensed matter physics, with priority placed on understanding how strains and crystal defects impact two-dimensional oxide-interfacial charges.

NTU's research showing two-dimensional-to-one-dimensional electronic condensation represents a novel electronic-inhomogeneity mechanism at oxide interfaces. In addition, its findings will surely motivate further studies of one-dimensional electron density in oxide heterostructures.

The study was a collaborative effort, including CCMS research fellow Jauyn Grace Lin, PhD student Shu-Ling Chen, and Prof. Jer-Ren Yang of the Department of Materials Science and Engineering. Initially launched by the former CCMS director, Prof. Cheng-Hsuan Chen, associate research fellow Ming-Wen Chu took on the project and PhD student Chin-Ping Chang served as first author of the research paper.



# Lectures Help First-Year Students Identify Personal and Career Goals

Confronting this challenging and intensely competitive era of globalization, a rising Asia, and the increasing effects of climate change, NTU regards the cultivation of talented professionals as its responsibility to society and the nation. And, core abilities are of the utmost importance if students are to develop the international competitiveness required of a modern professional.

In response to these challenges, NTU introduced the "First-Year Student Lectures" in the second semester of the 2013 academic year. Designed to enhance the students' basic core abilities, the course is a series of theme-based lectures led by professors, scholars, and professionals from on and off campus. Classes are held at night and the course is open to our upper classmen as well as to our college freshmen.

This semester, we offered two courses: "Basic Abilities and Knowing the Times" and "Self Exploration and Career Planning." "Basic Abilities and Knowing the Times" is a series of lectures planned and designed by Deputy Director Hung-Chi Kuo of the Center for General Education. Course topics cover understanding university education, time management, digital information, expression and communication, composition and reading, and knowing the times. The lectures are presented by an interdisciplinary team composed of some of NTU's finest educators, who lead the students in exploring the future skills that will be required of them as members of a free society. This course

accepts more than 200 students, but it also draws a large number of other students who come to audit the lectures each week, adding up to around 300 students in attendance in each class.

The "Self Exploration and Career Planning" lectures were planned by Dean Tsung-Fu Chen of the Office of Student Affairs with the assistance of the Student Counseling Center and Career Center. This course also drew over 100 students. Its purpose is to help students consider the career paths most appropriate for them once they enter society. Addressing such topics as self exploration, personal growth, leadership skills, workplace attitudes, and employment preparation, the course helps students build confidence while identifying their life goals and directions.



# Teaching and Learning



## Student Association's *NTU Sparks* Magazine Explores the Spirit of the Times

During mid-term exams, an eager, if not perhaps slightly inappropriate for that busy time of the semester, question could be heard around campus: "Where can I get the latest issue of *NTU Sparks*?" It was a sign that a new voice had started to circulate around campus.

*NTU Sparks* is a campus magazine published in print and digitally through the NTU Student Association. The magazine published its inaugural issue at the end of 2011, and it has just moved past its 15th issue. Having evolved much since its inception, the student publication has striven to take inspiration from the exuberance of sparks emitted from outstanding individuals of its generation.

When one thinks of sparks, a myriad of inspiration and images of aspiration float into one's mind, and one cannot help but wonder whether the sparks of the generation yearn to be more than just transitory memories. For its 15th issue, entitled "The Spirit of the Times," *NTU Sparks* gave voice to a group of people who were unwilling to let their sparks fade, but aspired to tell the stories of their times. Theirs is an aspiration born of inner anxiety and alienation that is being realized

through the spirit of their times. This spirit is defined by the "pursuit of unconventional success," "defining your own life" and "giving love to your society."

A look inside this issue reveals an exclusive interview with the poet Rob Yu-Chia Lo, who expounds on his thoughts about the world, society, and even himself, and considers such questions as: How does one find one's position in life? and How can we feel content and at ease at all times? There are also interviews with magician Sunny Chen, as well as writer, actress and model Gin Oy, and director Ya-Che Yang.

Singers Sandee Chan and Deserts Chang also address the spirit of the times by sharing their concerns and words of advice for young people and students, reminding them that following and obeying others blindly and without engaging in self reflection can lead to internal chaos.



# Workshop Helps Faculty and Staff Guide Campus Entrepreneurs

Taking on the economic trends of a new era, businesses are experiencing vigorous development in a variety of sectors and new enterprises are sprouting up like spring bamboo after a rain. As educators, how should we regard entrepreneurship?

NTU Vice President for Academic Affairs Liang-Gee Chen addressed this issue recently by inviting Dean of the College of Management Andy Ruey-Shan Guo and Director of the Creativity and Entrepreneurship Program Ji-Ren Lee to organize a creativity and entrepreneurship workshop that would help NTU's faculty and staff understand entrepreneurship and develop the ability to guide students in starting their own businesses.

Vice President Chen, Dean Guo, and Director Lee designed the workshop around forums, symposia and presentations of case studies in order to lead participants in considering and exploring ways to guide budding campus entrepreneurs through this new economic era so that optimum benefits could be harvested for technological research and development purposes.

The first workshop took place on May 1, lasting eight hours and attracting a full house of nearly 60 participants.

Vice President Chen told the participants that the creation of an enterprise stands as a specific expression of the fruits of outstanding

research. Proclaiming that NTU is home to extraordinary research teams, Chen expressed his deep belief that, if these teams persevere in exploring their imaginations and working in close collaboration, they will not only produce countless innovations, their achievements will also serve as the foundations for the creation of new businesses.

Vice President Chen also presented each participant with a copy of his new book, *An Innovative Life*, declaring that there is no "best" self, only a "better" self, while emphasizing that innovation is not just a noun, but a verb that that requires action.

# *Insectarium Awaits Visitors at the Foot of Chanchu Mountain*



*NTU's Insectarium is a two-story historic cottage located near the NTU campus at the foot of Taipei City's Chanchu (Toad) Mountain. The museum's off-campus location in proximity with nature offers an idyllic environment.*

**B**ack in 1928, Tokuichi Shiraki, then Minister of the Taiwan Agricultural Experiment Station, was hired by Taihoku Imperial University (NTU's predecessor) as chair professor of entomology and sericulture. Needing a facility to conduct research, Shiraki built what is now the Insectarium building next to his workplace at the agricultural station's Animal Research Division. Shiraki linked the two buildings via a corridor to integrate educational resources. Over the years, the Insectarium has helped cultivate an abundance of professional entomological talent.

Since its completion in 1936, the Insectarium building has withstood nearly 80 years of weathering. While most of the area is utilized as research offices, an exhibition space was added to showcase its precious specimen collection, many of which are hundreds of years old, making them accessible to the general public.

For more information on NTU's entomological pursuits, check out the Insectarium Facebook page and website.



# School of Pharmacy Occupies New Shui- Sen Building

Established on August 1, 2013, the School of Pharmacy took up formal occupancy of its newly-constructed Shui-Sen Building this year on April 18. During a tea party celebrating the move, the school's first dean Prof. Jih-Hwa Guh made a point of speaking on behalf of all of the school's students, faculty, and staff in expressing profound gratitude to school alumna Dr. Jane H. Hsiao for donating funds for the building's construction.

After graduating from NTU, Dr. Hsiao earned her PhD in the United States. Armed with her doctorate and an undefeatable determination, she first founded a company that had just four employees, but went on to ultimately establish IVAX Corp., which became the world's second largest manufacturer of generic pharmaceuticals.

Dr. Hsiao has given generously to her university, her school as well as Taiwanese society. It is for this reason that both NTU's Shui-Sen Building and Bi-Chen Building are named in honor of her parents.



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