



清华大学

Tsinghua University

September, 2011

Inside this Issue

1 News Focus

2 Highlight

3 Work in Partnership

This edition is prepared by the staff of the

Overseas R&D Management Office, UICC, Tsinghua University

Room 1203, Hua Ye Building Tsinghua University Beijing 100084, P.R. China Tel: +86-10-62773190 +86-10-62796025 uicc@tsinghua.edu.cn

UICC Newsletter

UICC (University-Industry Cooperation Committee), Tsinghua University

News Focus

“MAKE A HEALTHY, COMFY, QUALITY LIFE” – TSINGHUA · PHILIPS INNOVATION DAY

On Sept. 9th, Tsinghua · Philips Innovation Day was celebrated at Tsinghua University. With the theme of a “Healthy, Comfy and Quality Life”, a diverse range of innovative achievements resulting from cooperative projects between Tsinghua and Philips were exhibited as part of the Innovation Day. Yuan Si, Vice President of Tsinghua University, Kong Xianghui, CEO of Philips Greater China, Dirk-Jan van den Berg, President of Delft University of Science and Technology, Jan Reint Smit, Science Counselor from the Netherlands Embassy, and Shi Yigong, Dean of the School of Life Sciences of Tsinghua University all attended the opening ceremony.

Tsinghua and Philips have been cooperative partners since 1999, and have R&D collaboration in fields such as cardiovascular imaging, audio & video technology, IT, and intellectual property. The year 2011 is both the centenary of year of Tsinghua University and the 120th anniversary of Philips. In honor of such a special year, the “Tsinghua–Philips Innovation Day” was arranged with the aim of discussing how the university and the company could continue to work together in the future, to transfer their collaborative research achievements into production, and to further benefit society.



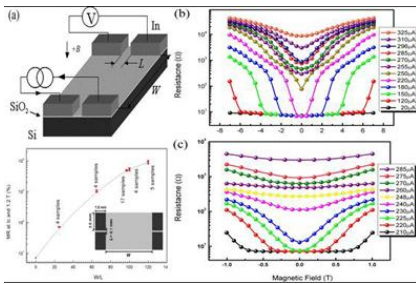
At the opening ceremony, Yuan Si and Kong Xianghui signed a research cooperation memorandum on behalf of Tsinghua University and Philips. The memorandum sets up a platform for long-term, comprehensive and strategic cooperation between the two

sides. Yuan Si said: “The innovative cooperation between Tsinghua and Philip is win-win cooperation. Both parties can leverage their own strengths and have achieved many outstanding results while maintaining a close partnership. It establishes a new model for university-industry cooperation.” Shi Yigong also expressed his wish that cooperation between Tsinghua and Philips could facilitate the development of basic research and life science with Tsinghua’s research resource in engineering fields such as IT, materials sciences, and promote the training of innovative and inter-disciplinary talents.

A series of events, including an innovation forum, an innovation exhibition, a student innovation competition and Philips talent training program were held as part of the innovation day. In the morning, distinguished guests from university, industry, and government agencies all exchanged views on how a “healthy, comfy and quality life” could be achieved through interdisciplinary innovation and research cooperation. During the innovation day many research achievements were exhibited, including joint research achievements of Tsinghua and Philips in MRI, innovative achievements of Tsinghua in bio-chip technology, brain-computer interfaces, surgical navigation systems and tumor therapy, and also the latest innovative products of Philips, including automatic fall monitoring systems, smart lamps, and air analyzers. These innovative technologies will play useful roles to improve living quality in healthcare, lighting and other areas.

Highlight

PROFESSOR ZHANG'S GROUP PUBLISHES PAPER IN NATURE



Professor Zhang Xiaozhong of the Department of Materials Science and Engineering, Tsinghua University and his PhD student Wan Caihua published a paper entitled “Geometrical enhancement of low-field magnetoresistance in silicon” in *Nature* on September 15, 2011. Zhang and Wan are the corresponding and first authors, respectively. This research work was carried out independently by Professor Zhang’s group and is the first time that a paper has been published in *Nature* or *Science* in the field of magnetoresistance with a Chinese institution as the first listed institution.



Inhomogeneity-induced magnetoresistance (IMR), reported in some non-magnetic semiconductors, particularly silicon, has triggered considerable interest owing to the large magnitude of the effect and its linear field dependence. Theories of this effect implicate spatial variation of the carrier mobility as being responsible for IMR. Prof. Zhang’s group showed that IMR in lightly doped n-type silicon can be significantly enhanced through hole injection, and then tuned by an applied current so that it occurs at low magnetic fields. In addition they designed an IMR device where the ‘inhomogeneity’ is provided by the p-n boundary formed between regions where conduction is dominated by the holes and electrons respectively: application of a magnetic field distorts the current in the boundary region, resulting in large IMR. This IMR device has a room-temperature

magnetoresistance, reaching 10% at 0.07 T and 100% at 0.2 T, which approaches the performance of the commercial giant magnetoresistance devices widely used nowadays in the computer industry. This new silicon based IMR device can work both in low and high magnetic fields and is therefore also attractive to the magnetic field sensing industry. Moreover, because the device is based on a conventional silicon platform, it should be possible to integrate it with existing silicon devices thereby aiding the development of silicon-based magnetoelectronics.

TSINGHUA INTERVIEWED BY MEDIA ON INTERNATIONAL SCIENCE AND TECHNOLOGY COOPERATION ACHIEVEMENTS

As part of the preparations for 9th national conference on science-related foreign affairs, correspondents from mainstream media, including Xinhua News Agency, China Daily, Science and Technology Daily, China News Service and Science Times, came to Tsinghua University on July 6th to interview the University about its achievements and experiences in the area of international science and technology cooperation during the 11th five-year plan period.

The attendants, led by Ruan Xiangping, Counselor of the International Cooperation Office of the Ministry of Science and Technology (MOST), included experts from China Science and Technology Exchange Center, the Information Center of MOST, the Beijing Municipal Science and Technology Commission, as well as media journalists. At the meeting reports on the progress of international science and technology cooperative projects sponsored by MOST were given by Prof. Yu Gang, Dean of School of Environment, Prof. Qiu Xinping from Department of Chemistry, Prof. Liu Dehua from Department of Chemical Engineering, and Dr. Xia Jianjun from the Building Energy Research Center of Tsinghua University. The Director of the Overseas R&D Management Office of Tsinghua, Dr. Ma Jun, hosted the meeting and gave an outline of international research cooperation at Tsinghua University.

After the meeting, the reporters also visited the experimental field stations for “Microorganism Fuel Cells”, “Application of UV in Drinking Water

Disinfection” and “New Process of Biodiesel Using Biological Method”, and also had on-site interviews with Prof. Huang Xia and Prof. Liu Wenjun from the School of Environment and with Prof. Liu Dehua.

TSINGHUA UNIVERSITY (RESEARCH INSTITUTE OF INFORMATION TECHNOLOGY) – NOKIA (RESEARCH CENTER) JOINT LABORATORY FOR MOBILE COMPUTER INNOVATIVE TECHNOLOGY UNVEILED



On June 27th the Tsinghua University (Research Institute of Information Technology) – Nokia (Research Center) Joint Laboratory for Mobile Computer Innovative Technology was unveiled during a ceremony at the multifunctional hall of the Future Internet Technology (FIT) Building. The establishment of joint lab marks a significant milestone in bilateral cooperative after the signing of a framework agreement on cooperative research in 2007. Prof. Shi Yuanchun, Director of the joint lab hosted the unveiling ceremony. Mr. Liu Zhen, Director of Nokia Beijing Research Center, Prof. Niu Zhisheng, Deputy Dean of School of Information Science and Technology, Prof. Liu Jun, Director of the Research Institute of Information Technology (RIIT), and experts from Nokia Research Center attended the ceremony. Prof. Li Jun and Mr. Liu Zhen delivered speeches on behalf of Tsinghua and Nokia, expressing the hope that more collaborative projects could be conducted and that more academic exchange activities could take place to take advantage of the supporting multi-disciplinary research platform provided by RIIT.

A symposium was held after the ceremony, during which Prof. Shi Yuanchun, Prof. Niu Zhisheng from Tsinghua University, and Dr. Yang Hao, Dr. Zhu Houdao and Dr. Cao Huanhuan from Nokia Research Institute gave keynote speeches on topics including future mobile service technology and internet technology.

Work in Partnership

TSINGHUA VICE PRESIDENT VISITS JAPANESE PARTNERS

A delegation led by Kang Kejun, Vice President of Tsinghua University visited several Japanese partner enterprises including Mitsubishi Heavy Industries (MHI), Toshiba and Hitachi from August 29th to September 2nd 2011. The Tsinghua delegation visited research institutes and production sites of the Japanese partners and had discussions with senior R&D management personnel.



At MHI, Vice President Yoshiaki Tsukuda met with Kang Kejun and Ni Weidou, Academician of Chinese Academy of Engineering and professor of the Dept. of Thermal Engineering of Tsinghua, and set a high value on R&D cooperation with Tsinghua over the years. At the Takasago Manufacturing and Nagasaki Institute, the Tsinghua delegation visited labs focused on research areas including aerodynamics, combustion technology, assembly of nuclear turbines, steam turbines, and gas turbines. They also visited production sites for integrated gasification combined cycle power generation systems and lithium ion batteries.

During the visit to Hitachi, the Tsinghua delegation listened to an introduction of several areas including smart grid technology, variable frequency drives, beam curing systems, nano-printing, and friction stir welding.

At Toshiba, President Norio Sasaki had a meeting with Kang Kejun. They exchanged their views on how to deepen mutual R&D cooperation via the platform of the Tsinghua-Toshiba Energy and Environment Research Center. At manufacturing sites of the Toshiba Fuchu Factory, Akira Sudo, CTO of Toshiba, introduced Toshiba's technology on solar power generation, elevators, and electric railways to the Tsinghua delegation.

Tsinghua University –Mitsubishi Heavy Industries Research Center Holds Review Meeting of 2011 Cooperative Projects

On July 10th, a review meeting of the cooperative projects undertaken by the Tsinghua-Mitsubishi Heavy Industries Research Center in 2011 was held. The meeting was co-chaired by Ni Weidou, Academician of Chinese Academy of Engineering, and Yoshiaki Tsukuda, Vice President of Mitsubishi Heavy Industries (MHI). About 90 faculty and students from Tsinghua University, and over 50 researchers from MHI, attended the meeting. Chinese and Japanese project investigators gave reports on the progress of the collaborative projects, and took part in panel discussions on special technical issues.

At the end of the meeting, Ni Weidou and Vice President Yoshiaki Tsukuda delivered closing speeches on the development and achievements of research collaboration between Tsinghua and MHI. In addition they expressed their views on some matters of worldwide concern, such as energy and resources, and also outlined the potential for future cooperation between Tsinghua and MHI.

Baker Hughes Delegation Visits Tsinghua

On July 7th, led by Richard Ward, President of Asia Pacific, executives and scientists from Baker Hughes visited Tsinghua University. Qiu Yong, Vice President of Tsinghua University met with the guests and exchanged ideas on university-industry R&D cooperation.

Jiang Xuepei, Executive Deputy Director of the Office of Scientific R&D, hosted the meeting and gave an outline of scientific research developments in Tsinghua University. Researchers from the Departments of Electronic Engineering, Materials Science and Engineering, Mechanical Engineering and Computer Science introduced the research resources and strengths of each department. After the meeting the guests from Baker Hughes took part in lab tours of the Departments of Electronic Engineering and Mechanical Engineering of Tsinghua University.

As a global oilfield industry company, Baker Hughes provides a broad range of products and services in aspects of drilling, well completion field service, and production management, designed

to help improve the efficiency of the petroleum industry and to increase reservoir productivity.

TSINGHUA UNIVERSITY – IHI RESEARCH CENTER HOLDS 10TH ANNIVERSARY CELEBRATION

On June 30th, the 10th anniversary celebration of the Tsinghua University – IHI Research Center was held in the Multifunctional Hall of the FIT Building of Tsinghua University. Over 60 people took part in the celebration including Dr. Sadao Degawa, Managing Executive Officer and General Manager of Corporate R&D, Hiroshi Iwamoto, Managing Executive Officer and Chief Regional Officer in China Region, Cen Zhangzhi, Deputy Chairman of Tsinghua University Council, Guo Zengyuan, Academician of Chinese Academy of Sciences, and researchers from the departments of Materials Science and Engineering, Precision Instruments and Mechanology, Thermal Engineering, and Computer Science and Technology.



Speakers from IHI and Tsinghua delivered reports reviewing the development of the research center over the past 10 years. Academician Guo Zengyuan gave a stimulating academic presentation on a new theory of heat transmission, and Jiang Xuepei, Executive Deputy Director of Office of Scientific R&D, gave an overview of scientific research at Tsinghua University, and Mr. Iwamoto outlined the development strategy of IHI in China. In past decade the win-win cooperation with Tsinghua has helped IHI to enhance its influence in the Chinese market, and has given students of Tsinghua the chance to develop their field of vision and to gain hands-on experience in international R&D projects. Both parties expressed the wish that through further cooperation, the Tsinghua – IHI Research Center would achieve still greater successes in the next decade.

As part of the celebration event, a Tsinghua – IHI Workshop was held from June 29th to 30th in Tsinghua University.