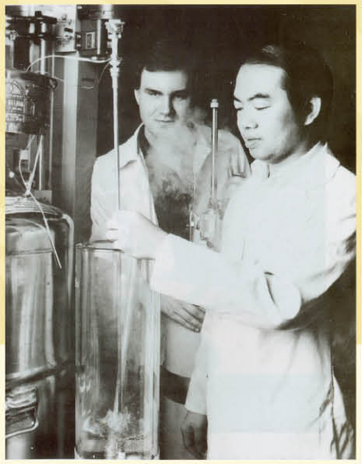
2011
Presidential Science Prize
Physics and Mathematics Sciences Category

Returning Home, Giving Back
Dr. Maw-Kuen Wu

AWARD CEREMONY PROGRAM

Prof. Maw-Kuen Wu has actively involved in superconductivity and magnetism research since 1978. The following summarize his accomplishments in his research career:

1. During his early research career (1978-1983) as a Ph.D. student and then as a research scientist under Professor C.W. Chu, he made several important observations that shed light into the later development of superconductivity. These works include the observation of: (a) pressure induced superconductivity in the Eu-based Chevrel phase compound; (b) the existence of a superconducting transition temperature (Tc) maximum in perovskite oxide superconductor under pressure.
2. In 1984 – 1989, as assistant professor of physics at the University of Alabama in Huntsville, and later as a tenure Professor at Columbia University, his research accomplishments can be summarized in the following: (a) observed the gravitational effect on Tc in immiscible metallic alloys; (b) the breakthrough discovery of superconductor with Tc above liquid nitrogen temperature (in collaboration with Prof. C.W. Chu); (c) observed the magnetic suspension effect in high Tc superconductors with



strong flux pinning effect.

3. In 1990 Prof. Wu returned to Taiwan to organize a research team working on high Tc superconductors and other oxide compounds that exhibit strong electron-correlated effects at the Tsing Hua University. In the period 1990—2000, in collaboration with his colleagues at the Materials Science Center, his research focus was to develop better processing parameters in order to improve the high Tc materials for practical applications. Some of the results are: (a) the enhancement of phase stability in high Tc oxides by addition of metallic oxides; (b) observation of the vortex-glass-vortex liquid transition in YBa2Cu3O7 system; (c) crystallization of perovskite superconductors by low temperature electrochemical deposition; (d) development of a new synthetic route to the formation of alkaline-metal doped C60 superconductors.

In addition to the above results, during this period Prof. Wu also made the important observation of possible p-wave superconductor in Ru-based double perovskite compounds. These results demonstrated the possibility of unconventional superconductivity in non-copper based oxides, which also manifested the importance of the interplay between superconductivity and magnetism.

After year 2002, Dr. Wu moved to the Institute of Physics. His research activities focused on the following topics:

1. The development of novel processes to grow oxide crystals, especially the Ru-based double perovskite compounds.
2. Together with collaborators at National Synchrotron Facility in Taiwan, Dr. Wu's team has studied the multiferroic material LiCu2O2. They observed magnetic order, which could be closely associated with the orbital polarization of the unoccupied states.
3. In 2008, Dr. Wu's team at Academia Sinica discovered a binary Iron based compound (FeSe) that superconducts at ~8K. This compound is the simplest, structurally, Fe based superconductor to date, and this work provides an alternative route from the iron-arsenic based superconductors to study the interesting and exciting new Fe based superconductors.

In addition to the scholarly contributions listed above, Prof. Wu has played an important role in helping advance Taiwan's science and technology. After returning to Taiwan from the US in the early 1990s, Prof. Wu helped establish the infrastructure for superconductivity and low temperature physics and materials science research. His efforts covered the full spectra, from materials synthesis to properties characterizations. This laid the groundwork for much of the novel oxide material researches listed earlier. During this time, Prof. Wu also played critical administrative roles, such as serving as the Chairman of the Research and Development Committee of Tsing Hua University. In this capacity, he helped Tsing Hua receive a grant from the National Science Council to establish the National Center for Theoretical Sciences. We have witnessed a significant improvement of the theoretical physics activities in Taiwan since the establishment of the Center, as it provides ample opportunities for young students and physicists to advance in the field of theoretical physics.

Prof. Wu served as the Deputy Minister in year 2000-2002, and the Minister in 2004-2006 of the National Science (NSC) of Taiwan. During the time he worked at the NSC, besides continuing his own researches, he made significant contribution to help shape up better science and technology policies and promote scientific activities. One most notable contribution he made was to make the use of research funding from the NSC more flexible. He has also created a mechanism to allocate extra budget to facilitate the construction of several major research infrastructure: such as the new 3GeV Synchrotron Light Source; the participation in the International ALMA Radio-Astronomy Program; a new Ocean Research Vessel. Furthermore, Prof. Wu initiated a National Initiative on Nanoscience & Nanotechnology during his first tenure at the National Science Council of Taiwan, and served as the founding executive director of the program. The program has substantially advanced the nano-science and nanotechnology research capabilities in Taiwan since it was inaugurated in 2003. A recent international survey by Lux Research Inc. showed that the accomplishments made by Taiwanese scientists were among the "Leaders" status in the international community. This is a highly regarded accomplishment. In addition, Prof. Wu has made great effort to help the research community in Taiwan establish international collaboration for advanced research. He has initiated the close collaboration between the Japan Science and Technology Corporation (JST) and Taiwan's National Science Council. Through his efforts, the US Air Force Office of Scientific Research (US AFOSR) and Taiwan have formed a long-term collaboration to accelerate academic excellence in nanotechnology research.

Prof. Wu's scientific achievements have been recognized throughout the academic community. He was one of the 1988 Comstock Prize recipients awarded by the US National Academy of Sciences, received the prestigious Bernd Matthias prize in 1994, and was elected as a member of the Academia Sinica, the highest honor within the Chinese-speaking academic world. He has also been elected to the National Academy of Sciences in the United States as a Foreign Associate, as well as a member of the Academy of the Developing Countries. In 2008, he received the Erice Prize for Peace from Italy, and last year he received the prestigious Humboldt Research Award from Germany. In May 2011 he was awarded the Nikkei Asia Prize.

There was a child who grew up in Hualien, on the eastern coast of Taiwan, who spent most of his childhood playing either in the mountains or in the Pacific Ocean. He came from humble beginnings and did not study at famous universities, yet, he ushered in a new epoch in the American scientific community. He was even nominated for the Nobel Prize in Physics.

THE STORY OF A CHAMPION

After returning to Taiwan, he served as a professor, a government official, and director of several highly successful national scientific research programs. Now, that child is returning to his hometown, Hualien. As the newly-elected President of Dong Hwa University, he wishes to share his ideals and the knowledge that he has accumulated with his hometown. He has even demanded his childhood companions (many of whom are now prominent local figures) to serve as volunteers at the University, reminding them, "You promised to volunteer!"

A child who grew up in the mountains

Dr. Maw-Kuen Wu, the Director of the Institute of Physics and an elected Member of Academia Sinica and an elected Foreign Associate of the US National Academy of Sciences, was born in the town of Yuli, in Hualien in 1949. He is the youngest of eleven children in his family. "My childhood was very fulfilling!" Dr. Wu recalls that while growing up, no one really gave him any 'restraints' given the fact that he did very well at school, "We always played 'hide and seek' or picked up fruits or simply fooled around all afternoon until the sixth grade."

Despite the carefree life, Dr. Wu says that he was fortunate to have good teachers, and he remembers his elementary school science teacher the most, Mr. Ling-Bin Tzeng. Mr. Tzeng was an extremely strict but responsible teacher and later become his brother-in-law. People would wonder whether Dr. Wu received preferential treatment? "Of course not!" Dr. Wu recalls vividly. Once, he and several other students were using the vine of a sponge cucumber as cigarette, just for fun. A few days later, Mr. Tzeng was punishing the smoking students in the daily assembly at school. Dr. Wu didn't come out and confess his involvement. After the assembly was dismissed, Mr. Tzeng broadcast to the whole school," Maw-Kuen Wu, why you did not stand out when I asked who was smoking?" Dr. Wu recalls, "I was so ashamed on that moment." Yet, Dr. Wu is still grateful for Mr. Tzeng pointing him towards the path of science.

Before the implementation of the nine-year compulsory education requirement, students needed to take an entrance examination to enter junior high school. Dr. Wu elaborates that, by that time, less than half of all students in his school were able to continue their studies, mostly because of the economic constraints or poor academic performances. Dr. Wu, on the contrary, did not have such problems. His father and brothers encouraged him to take the entrance examination to attend school in the county capital, Hualien City. You may wonder what the result was. Dr. Wu answered jocularly, "I was last place!" Nonetheless, Dr. Wu successfully got into the National Hualien High School, but he was placed in the last class at school.

Climbing up from the bottom

"It is not necessary that you are doomed to be inferior if you do not do well in your entrance examination." Dr. Wu started to put more effort into studies, and one year later, he was reassigned to the top class of the school. When he finished middle school, Dr. Wu was directly admitted to the National Hualien Senior High School without the need to take an entrance exam. As he did not have to worry about the entrance examination, Dr. Wu had the time and freedom to read broadly. Dr. Wu points out that he spent nearly all day reading in the library -- reading everything from newspapers to literature to Chinese martial arts novels. Aside from reading, the high school's wide-open environment and surroundings also allowed Dr. Wu to freely explore the world and develop his own ideas. The view of the Pacific Ocean provided abundant inspirations for Dr. Wu. "If I had a chance to go back to the past, I would still choose to follow the same path."

Yet, in a more rural place like Hualien, good teachers were hard to come by and harder to retain. Dr. Wu states that their school did not have a permanent physics teacher throughout high school, so that the students had to find the answers to physics questions on their own. His Chinese teacher was also too knowledgeable about the Chinese classics, and failed to finish teaching all of the required curriculum. Even then, Dr. Wu felt that there would be no problem to succeed in the college entrance examination. However, the result of the exam told a different story. Out of forty students attending the college entrance examination from his high school, only two people were accepted by the top university in Taiwan, National Taiwan University.

Physics study as a future career

"Actually I did not consider too many universities for my Physics studies." Dr. Wu chose to study at the Tamkang University's Physics Department. Dr. Wu points out that he chose physics for a reason: though he was good at English and Chemistry in high school, he realized that the studies of Chemistry are actually derived from Quantum physics, the pivot of modern science. Dr. Wu remembers several additional key deciding factors. Dr. Wu took in his sophomore year a course on relativity, which was taught by Prof. Wei-yeu Chen. Dr. Wu remembers being deeply fascinated by the theory of special relativity. Furthermore, the awarding of the Nobel Prize in 1957 to Chen-Ning Yang and Tsung-Dao Lee gave great hope to a generation of young Asian scientists, and Dr. Wu remembers himself being inspired by their successes. In Dr. Wu's senior year, David Weinflash (now retired) led a special topics course, and it was in this course that Dr. Wu first learned about superconductivity. This was when Dr. Wu decided that superconductivity would be his future research interest.

Dr. Wu's college career was full of fun moments. "We 'Hualien-ers' lived together, and took the same construction jobs during our summer breaks." Dr. Wu recalls that the summer before graduate school, he and a bunch of his friends helped to construct Tamkang's new female dorm. They laid the foundations and built the concrete for the building. "We started working at four or five in the morning and finished at around eight, every day." They once tried to take on the challenge of laying asphalt on the street, but they could not bear the work for more than one day. "It was too hot and we could not bear the smell of asphalt." All these part-time jobs provided Dr. Wu with the opportunity to acquire new skills and learn new things. Hence he highly encourages youngsters to experience and learn more from their larger environment when they are in college.

Dr. Wu's family considered graduating from college already quite an achievement, but Dr. Wu credits his success to how his family supported him. Dr. Wu always thinks that his siblings are much smarter than him; they just did not have the financial support to continue their studies. "I admire them so much because they achieve their goals on their own." Dr. Wu's oldest brother rose to become the Director of the Telecommunication Bureau in Zhunan Township, Miaoli County. The second eldest brother, after retiring from the air force, had a successful career as Chief Aircraft Maintenance Engineer. Two older sisters were teachers and the youngest sister was the chief accounting officer of Taiwan's Fisheries Agency.

Dr. Wu met his wife and life partner, Hui-Chin Tang, in his first summer break in graduate school. "I was her senior back in school and I thought she was very cute." "I realized later that she was actually angry at me when we were children because I won the first place in a calligraphy competition over her." In that summer, Dr. Wu was working in one of his brother's plumber and electrician shop and Ms. Tang was teaching in the Yuli Junior High School. One day, when Dr. Wu was fixing a light-bulb at Yuli Junior High School, they met and a flame of attraction was sparked, just as the bulb sparked light over the room. When Dr. Wu served in the military, he recalls, "I spent almost all of my salary buying airplane tickets to visit her, and I was always the last one arriving back at our military camp."

Right before Dr. Wu finished his military service, his father helped him find a teaching post at the Dahan Junior College (now the Dahan Institute of Technology). However, Dr. Wu decided to study abroad even though his father had already helped him to procure a teaching job in his hometown. After being accepted by the Physics Department of University of Houston to study for a doctorate, Dr. Wu married Ms. Tang. Ms. Tang was also accepted into a graduate program at the same University, and they moved to the United States to start a new period of their lives together.

Superconductivity study with Dr. Paul Ching-Wu Chu

When Dr. Wu arrived in Huston, the University of Houston recruited Dr. Paul Ching-Wu Chu, born in Taiwan, to join the department. The first time that Dr. Wu met Dr. Chu was in the elevator. "I remember that I saw a 'smallish' young Chinese guy in the elevator," said Dr. Wu. Later on, Dr. Wu was told by the Chairman of the Physics Department that if he wished to study superconductivity, Dr. Chu was the right one to seek. Dr. Wu did pay Dr. Chu a visit and found out Dr. Chu was that 'smallish guy'.

What is "superconductivity"? A key feature of superconductivity is that the resistance of a material goes to zero when the temperature of that material drops below a critical temperature, the so called superconducting transition temperature. A second key feature is that the material expels magnetic fields. The first feature has broad technological implications,

because electrical transmission in a superconducting material suffers no loss. Superconductors thus have the potential to play an important role in resolving the energy crisis.

Superconductivity was first discovered in 1911 by the lab of Dutch scientist Heike Kamerlingh Onnes, who observed that at the temperature of 4.2 K, the mercury electrical resistance abruptly disappeared to near absolute zero when using liquid helium as a refrigerant. In 1913, Onnes again discovered that tin and lead also become superconducting, and these discoveries set the foundation of 'low-temperature Physics'. Onnes was awarded the Nobel Physics Prize in the same year.

The Wu family's initial years in the US were financially difficult. Sharing only one scholarship, Dr. Wu's wife took a part-time job in the library. Yet, Ms. Tang was highly valued by her employers, "Her salary was even more than my scholarship," said Dr. Wu. In 1980, Dr. Wu's first son, Phillip, was born. A year later, Dr. Wu attained his PhD degree. After their younger son, Albert, was born, Ms. Tang had to balance her career with staying home to take care of the children.

In 1984, Dr. Wu obtained a faculty position at the University of Alabama in Huntsville. Dr. Wu continued to collaborate with Dr. Chu on superconductivity research. On the eve of the Chinese New Year, 27th January 1987, at Huntsville, Dr. Wu's team made a stunning discovery. They found a high temperature superconductor, 'Yttrium barium copper oxide', which became superconducting at a transition temperature of 90 K, which was higher than the boiling point of liquid nitrogen, 77K. "I jumped up after seeing the data and was shaking. I could not calm down for more than 20 minutes!" said Dr. Wu. This discovery immediately attracted global attention, and the former President Ronald Reagan assembled a nation wide superconductivity conference right after the discovery, to spark further studies to search for high temperature superconductivity.

Returning home

In 1988, Dr. Wu returned to Taiwan for a short visit. The former president of Tamkang University, Dr. C P Chang, arranged for Dr. Wu to meet the former President Lee Teng-hui. The two talked for well over an hour about the excitement of superconductivity. President Lee then decided to invite Dr. Wu to give a speech on superconductivity in the Presidential Office monthly meetings. He was the first non-governmental speaker to be given this invitation. President Teng-hui Lee was determined to develop advanced cutting-edge technology in Taiwan. Hence both he and the former President of Tsing Hua University, Liu Chao-shiuan (now the president of the General Association of Chinese Culture) persuaded Dr. Wu to come back Taiwan. "I gave it some thought, then I decided to see give it a shot." In 1990, Dr. Wu took the job as a visiting chair professor in Tsing Hua University and established the 'Superconductivity Research Program," with the research center's headquarters set in Tsing Hua University.

Dr. Wu knew he could not return alone, and so he persuaded a group of influential scholars to also return to Taiwan to help build the superconductivity research. Those who returned include the married couple previously at Bell Labs, Drs. Minghwei Hong and Kwo Ray Nien (now they are both serving in Tsing Hua University), Dr. Cheng-Hsuan Chen also from Bell Labs (now a professor of at the Institute of Condensed Matter in National Taiwan University), Dr. Cheng-Chung Chi from IBM (now professor of Physics, Tsing Hua University) and Dr. Ting-Kuo Lee of Virginia Tech (now a Distinguished Research Fellow in the Institute of Physics, Academia Sinica).

In 1992 Dr. Wu served as Tsing Hua's Materials Science Center director andconcurrently held the post of chairman of the university's research and development council. In the meantime, Dr, Wu also helped former University President Chun-Shan Shen in the establishment of a "National Center for Theoretical Sciences" (NCS). In 2000, Dr. Wu was asked by Dr. Wong Cheng I to serve as the deputy chairman of the National Science Council. "I accepted the invitation without too much thinking," Dr. Wu said.

Dr. Wu misses his time working in the NSC. The NSC was able to gather together some of the best and brightest experts in their respective fields. Hence, from decision making to policy enforcement, the NSC team was able to worked well together. In his short time at the NSC, Dr. Wu and his team improved the funding mechanism to allow researchers more flexibility with their budgets.

In addition, the NSC established new academic rewards such as the "Ta-You Wu Memorial Award" for youth researchers and the "Presidential Science Prize", the highest scientific academic award in Taiwan. The NSC also subsidized researchers to seek further studies abroad, and tried to boost the payment for newly hired researchers in various academic fields.

Serving in the Government

In January 2002, Dr. Wu moved to the Academia Sinica and took the position of Director of the Institute of Physics. In 2004, Dr. Wu accepted the position of the chairman of the National Science Council.

Dr. Wu said that besides the fixed meetings within NSC committees, they organized a monthly "Lunch Meeting"chaired by Dr. Yuan T. Lee, the President of Academia Sinica. That meeting gathered all important leaders of technical departments under government agencies such as the Ministry of Education, the Ministry of Economics Affairs, the Department of Health, the Council of Agriculture, and the Science and Technology Advisory Group. It also included Ministers without portfolio. Such meetings helped reached consensus or even policy decisions on some of the most important technical issues. It was much more efficient to plan the budget for technical programs by communicating face-to-face with the ministers so that there would be no misunderstanding.

"The budget for the high-tech research cannot squeeze out other budgets for general usages," Dr. Wu believed. As such, when serving in the NSC, Dr. Wu put much effort to support the upgrade of the "Synchrotron Radiation Research", build up ocean research ships, develop astronomical research, and promote Nano-technology research and National Digital Archives Program. Dr. Wu also helped establish the Central Taiwan Science Park. He did all these without affecting basic academic research. During that period, the Ministry of Education and the Council for Economic Planning & Development started a program called "Taiwan Merit Scholarships (TMS) Program"which aimed to subsidize students to study basic science, important technologies or social science overseas. Some beneficiaries of this program have already returned to work in Taiwan.

"The Aim for the Top University Project"so called the"Five-year, Fifty Billion Budget"(initially named"Aiming for the Top University and Elite Research Center Development Plan"),and the"World Class Research University Project" were initiated by Dr. Y. T. Lee and the committee on education. They then tasked the NSC and the Ministry of Education

to execute this project. Dr. Wu states that though it's not 100% perfect, the project has undoubtedly had positive impact on several Taiwan Universities.

Creating a comfortable environment for Scientific Research

During the seven years that he served as the Director of the Institute of Physics at the Academia Sinica, Dr. Wu has tried to provide a cozy research environment for the staff and researchers of the Institute. At the entrance of the Institute, you can easily see a coffee bar where staff could rest, chat or discuss business. In the hallway, you can find all kinds of artworks on the wall, most of them created by the staff. Among all the artworks, Dr. Wu likes Fan-sen Wang's (now a Vice President of the Academia Sinica) calligraphy the most. This calligraphy is quoted from Fang Yizhi's (a scholar during the late Ming and early Qing Dynasty) book "Physical Knowledge" (which is the first book that mentioned "Physics" in Chinese): "the air forms into a certain shape as light and voice. Yet there still exists some unformed air lingering…"

If you see the banner of "The Institute of Physics, Academia Sinica" hung in the Physics Institute's old building, you can detect that the writing looks different. "Academia Sinica" was written by the founder of the Institute, Dr. Ta-You Wu, but "Institute of Physics" was added by Dr. Wu himself. Dr. Wu also wants us to pay attention to the solar power panels hung on the side of the building, which are arranged to spell "IOP", the abbreviation of "Institute of Physics".

In 2003, Dr. Wu donated ten thousand TWD to encourage the staff to design the institute insignia. Dr. Chia-Seng Chang, in the end, won the competition. His design presents "IOP" with red, green and blue, the three primary colors (RGB color). If you look carefully, you can find four characters: G, c, h, k, which stand for the gravitational constant, the speed of light, the Planck constant and the Boltzmann constant; these are the most important constants in classical physics, electromagnetism, quantum physics and statistics. You can also find '1928'; the year the Institute was founded.

The path toward the future is to give back to one's native land.

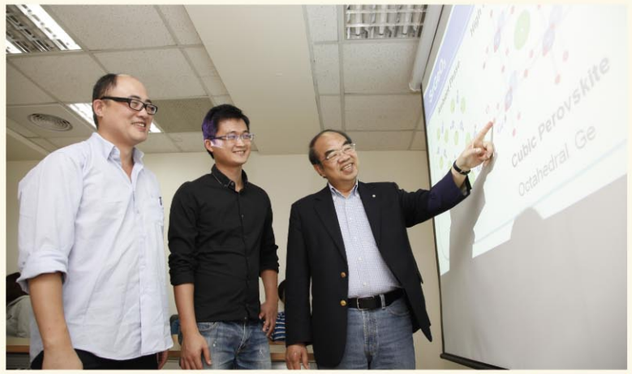
Dr. Wu visits his home-town Hualien very often, not only because he grew up there, but also because he maintains close relationship with his childhood friends. He would also instruct students at the Hualien Senior High School on how to prepare for the International Physics Olympiad competition. Dr. Wu's friends had asked him if he wished to come back to serve as the President of Dong Hwa University. Dr. Wu did not take this very seriously. However, as he heard more and more voices of 'persuasion', Dr. Wu started to consider more seriously the possibility of returning home.

The incumbent President, Dr. Huang Wen-Shu's term ends next January. Seeing that his laboratories are currently running well, Dr. Wu decided to "give it a try" and throw his hat in the ring in the search for Dong Hwa's next President. After several interviews and presentations, a 15-member election committee held two-rounds of voting, where Dr. Wu won more than half of the votes. The Ministry of Education formally elected Dr. Wu as the new President of Dong Hua University in October.

Professor Wei-Pang Yang, Dean of Academic Affairs at Dong Hwa University, is Dr. Wu's senior high school classmate. Prof. Yang says Dr. Wu was full of brilliant ideas when he was a child, and that creativity has also helped Dr. Wu become successful academically. Prof. Yang of course knows very well that Dr. Wu has great passion for Hualien and has many expectations for Dong Hua University.

Some may wonder, "How has Dr. Wu educated his children?" His oldest son, Phillip Wu, inherited his father's talent in Physics and now, together with his wife, Debby Chang, are working as postdocs in Sweden. "He has more curiosity than me. He is good at problem-solving." says Dr. Wu. His second son, Albert Wu, feels a "spark of inspiration" when he studies history, and was "bored" by Physics. He is working on his PhD degree in the Department of History at the University of California, Berkeley. "Recently, I find it is very enjoyable listening to Jazz with my youngest son," says Dr. Wu.

Dr. Wu believes that talented people, regardless of field, can all be very successful. "It is certainly an outdated conception that you can only find a better job or have a better future if you study science or engineering." It is no longer the trend that scientists are guaranteed good jobs, since competition is so fierce within the well-developed world of high-tech in Taiwan. Dr. Wu thinks that young people should discover their own career path by themselves. Therefore, when they are about to decide their colleges, it is better for them to visit that college and experience it before deciding.



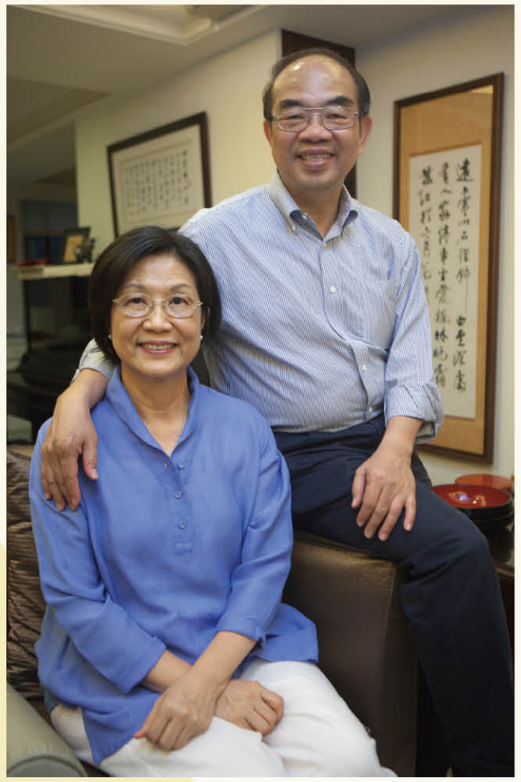
Dr. Wu lived abroad for a long time because of his studies and early research. Thus, Dr. Wu has very unique feelings about home. He thinks that a university should feel like "home" -- a university should foster a feeling of solidarity and sense of kinship among faculty, staff, and students. Everyone at the college should feel as close as families as they learn together, taking care of each other and better yet, grow together.

The new president's visions for Dong Hwa University

Regarding his ideas for the future of Dong Hwa University, Dr. Wu highlights that the main aim of a successful college education is to let students receive solid training in whatever field they are engaged in. With such training, the students would possess the required knowledge and skills that would allow them to survive in a variety of working situations, including further graduate studies.

Dr. Wu indicates "the responsibility of a university is to train students who are ready to offer a significant contribution to our local communities, to our nation and even to all of whole mankind." A basic task of an excellent university is to provide strict training in a broad range of disciplines. Meanwhile, a university should provide professional training to equip students to contribute to society. Furthermore, a university should provide an environment that allows talented students with unique potential to develop their talents, which could lead to "historical breakthroughs" that will benefit society.

Dr. Wu wishes to "globalize" Dong Hwa University, and he hopes that every student should at least become familiar with two or more languages. He envisages a campus where one can meet world-class scholars at every corner on the campus and students who eagerly absorb knowledge and enthusiastically discuss what they have learned. Dr. Wu wishes to establish a "Mentor" system in the University, which means that seniors can guide juniors in all aspects



of university life. He also hopes that the Faculty of Environmental Science can help to develop programs so that the university can become the first university campus in Taiwan with a carbon-neutral footprint.

"I have some ideas which probably can be realized here in Dong Hwa" Dr. Wu states. It was the tug of home feel that motivated him to return to Hualien. Just like Dr. Wu gathered together a group of research fellows from the US to come back to Taiwan in the late 1980s, now, after he has been elected as the new president, he has appealed to his friends who encouraged him to run to form a team with him. "You promised to be our volunteers," Dr. Wu reminds his friends.

A lot of athletes are proud of serving their national team regardless of salary. Likewise,Dr. Wu is proud to return to serve his hometown. All of Dr. Wu's achievements -- in the field of high-temperature superconductivity, the nomination for the Noble Prize for Physics, and his work as a government official in the field of science and technology -- has shown how much Dr. Wu has done for Taiwan and global science. It thus seems trivial that Dr. Wu owns no diplomas from famous universities. Rather, Dr. Wu exemplifies that one can achieve lofty goals as long as one works hard for it. The "Presidential Science Award" is thus a well-deserved honor for Dr. Wu.

LIST OF SELECTED PUBLICATIONS

1. C.W. Chu, S.Z. Huang, C.H. Lin, R.L. Meng, and M.K. Wu, "High-pressure study of the anomalous rare-earth ternaries $Eu_{1.2}Mo_6S_8$ and $Eu_{1.2}Mo_6Se_8$", Phys. Rev. Letts. 46(4),276-279, 1981.

2. M. K. Wu, R.L. Meng, S.Z. Huang, C.W. Chu, "Superconductivity in $BaPb_{1-X}Bi_XO_3$ near the metal-semiconductor phase-boundary under pressure", Phys. Rev. B, 24(7), 4075-4078, 1981.

3. M, K, Wu, J.R. Ashburn, C.J. Torng, P.H. Hor, R.L. Meng, L. Gao, Z.J. Huamg, Y.Q. Wang and C.W. Chu, "Superconductivity at 93-K in a new mixed-phase Y-Ba-Cu-O compound system at ambient pressure", Phys. Rev. Letts., 58(9), 908-910, 1987.

4. P.H. Hor, L. Gao, R.L. Meng, Z.J. Huang, Y.Q. Wang, K. Forster, J. Vassilous, C. W. Chu, M.K. Wu, J.R. Ashburn, C.J. Torng, "High-pressure study of the new Y-Ba-Cu-O Superconducting compound system", Phys. Rev. Letts., 58(9), 911-912, 1987.

5. M.K. Wu, J.R. Ashburn, C.A. Higgins, B.H. Loo, D.H. Burns, A. Ibrahim. T.D. Rolin, F.Z. Chien and C.Y. Huang, "Superconductivity in the Y-Sr-Cu-O system", Phys. Rev. B, 37 (16), 9765-9768, 1988.

6. P.N. Peters, R.C. Sisk, E.W. Urban, C.Y. Huang and M.K. Wu, "Observation of enhanced properties in samples of silver-oxide doped $YBa_2Cu_3O_X$", Applied Phy/ Letts., 52(24), 2066-2067, 1988.

7. M.K. Wu, D.Y. Chen, F.Z. Chien, S.R. Sheen, D.C. Ling, C.Y. Tai, G.Y. Tseng, D.H. Chen and F.C. Zhang, "Anomalous magnetic and superconducting properties in a Ru-based double perovskite", Zeitschrift fur Physik B-Condended Matter, 102 (1): 37-41, 1997.

8. F.C. Hsu, J.Y. Luo, K.W. Yeh, T.K. Chen, T.W. Huang, P.M. Wu, Y.C. Lee, Y.L. Huang, Y.Y. Chu, D.C. Yan and M.K. Wu, "Superconductivity in the PbO-type structure alpha-FeSe", Proc. Natl. Acad. Sci. v105 14262-14264, 2008.

9. K.W. Yeh, T.W. Huang, Y.L. Huang, T.K. Chen, F.C. Hsu, P.M. Wu, Y.C. Lee, Y.Y. Chu, C.L. Chen, J.Y. Luo, D.C. Yan and M.K. Wu, "Tellurium substitution effect on superconductivity of the α-phase Iron Selenide", European Physical letter, 84, 37002, 2008.

10. M. J. Wang, J.Y. Luo, T.W. Huang, H. H. Chang, T. K. Chen, F. C. Hsu, C. T. Wu, P. M. Wu, A. M. Chang, M.K. Wu, "Crystal Orientation and Thickness Dependence of the Superconducting Transition Temperature of Tetragonal FeSe1-x Thin Films", Phys. Rev. Letts, 103, 117002, 2009.