

POSTECH Newsletter

Vol.51 www.postech.ac.kr



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The POSTECH Newsletter is published quarterly by the International Relations Office to provide University news and information on academic and research achievements of POSTECH members. To receive a free copy of the POSTECH Newsletter, please write to us or visit us online at www.postech.ac.kr

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Edited and published by:

International Relations Office

Design:

Dongin Forum
Tel: +82-2-521-0725

New Year's Message from the President

The New Year of 2010, the Year of the Tiger, has begun. We now put behind us an arduous year full of hardships resulting from the global economic crisis. I hope that the New Year will bring about many cheering and comforting news.

With the start of the New Year, only 10 years remain until 2020, the pledged year for the achievement of POSTECH Vision 2020. As you may be well aware, POSTECH Vision 2020 was declared in April 2006, in commemoration of the University's 20th Anniversary, to affirm Postechians as well as alumni, parents, and the world, our determination not to falter and grow complacent in leading within Korea, but to leap forward to be one of the world's leading science and engineering universities, marking a position in the world top 20 by the year 2020. And 4 years have passed since the announcement of this ambitious goal.

We have made remarkable advances, thanks to the undivided passion and devotion of Postechians, but the recognition and influence of the University on the international level still falls short of our expectations. In fact, in some key areas including globalization, our standing in a recent ranking of domestic universities was lowered significantly due to the rapid growth of competing universities.

In the New Year of 2010, we shall make doubled efforts to carve out POSTECH's future in the myriad of new challenges. I urge all members of the University to put on a spurt and join me in this earnest endeavor.

In 2010, we will be putting into action a number of key strategic plans. These propositions are to further define the future of POSTECH as well as lay the foundation to lead science and the nation. The two projects of utmost priority are strengthening of the University's competence through the strategy of selection and concentration, and globalization.

Formed in November 2009, the POSTECH Academy Council (PAC) has as its members some of the most renowned scholars of the University, who will assist in establishment of both university and department-level strategies for drastic improvement in the research capabilities of POSTECH. With the PAC acting as the leverage, we hope to found and nurture research groups of world-class competitiveness.

The globalization plan, as reported to the Board of Directors in December 2009, aims to realize integral globalization of the campus in the next 3 years, which will place POSTECH on the threshold of becoming a world's leading university. The scope and contents of the plan include: common use of the English language as the medium not only of the classrooms but also of the administrative duties and the general life on campus as a whole; recruitment and procurement of world-class scholars and research institutions; and verifiable interchange with the world's top universities.

We all would agree that the challenges POSTECH has met and the accomplishments it has made in the last 23 years have marked a giant step forward in higher education as well as in science and technology of Korea.

In 2009, we took another innovative measure of introducing to the Korean educational system a completely novel undergraduate admission procedure based on the judgment of professional admission officers, highly regarding talent, creativity and potential to grow as global leaders rather than standardized test scores.

Strengthening the humanities and social science division as well as the department of mathematics adds to the efforts of the University to offer customized education for our elite students, and to foster them into the global leaders of science and technology.

New graduate programs in the Division of Advanced Materials Science (AMS), the Division of Integrative Biosciences and Biotechnology (IBB), and the Division of IT Convergence Engineering (ITCE) through the World Class University (WCU) project is another important accomplishment, which is expected to add momentum to our efforts to elevate academic excellence and global visibility, rapidly and decisively.

The new government funding of \$100 million for upgrading the synchrotron light source of the Pohang Accelerator Laboratory (PAL), and the long-term academy-industry partnership agreement with the mammoth corporation ExxonMobil are also noticeable achievements.

I am deeply thankful to all faculty, staffs, students, and researchers of POSTECH for their dedication and hard work, doing their part for the continued advancement of the University. All supporters of the University, including POSCO family members and the citizens of Pohang, are appreciated for their continued support, even in the difficult internal and external circumstances of the crisis-stricken 2009. I ask all of you to once again put efforts together in the New Year so that our exertions may one by one bear fruit.

I hope that our hard work toward the great vision of POSTECH will blossom in the New Year of the Tiger, roaring beyond Youngil Bay, to every corner of the world. May health and blessing be with you and your family.

Happy New Year!

Sunggi Baik
President

Eco-Friendly Ultrahigh-Density Data Storage Material Developed



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Professor Jin Kon Kim (Department of Chemical Engineering) and his group have succeeded in developing macromolecule materials which use pressure to store terabit-scale ultrahigh-density data at room temperature, as well as the supporting technology to write, read, and erase the ultrahigh-density array of nanoscopic indentations.

The existing technology for fabricating nanopatterns, developed by IBM, was based on a thermomechanical recording system, using a heated atomic force microscope (AFM) tip at about 350°C. However, in addition to the difficulties in the fabrication of heated AFM tips, a relatively large power was consumed because of the very small percentage (<1%) of heat transmitted from the heated AFM tips to the polymer film.

Professor Kim's group introduced a novel concept of using AFM, but without a heated tip. The nanopatterns are generated on the polymer film by the AFM tip at room temperature, and these nanopatterns retain their original shapes at room temperature. This process is only possible by using a specific block copolymer film exhibiting a baroplastic property that enables processing at a relatively low pressure and temperature by micro-phase transition.

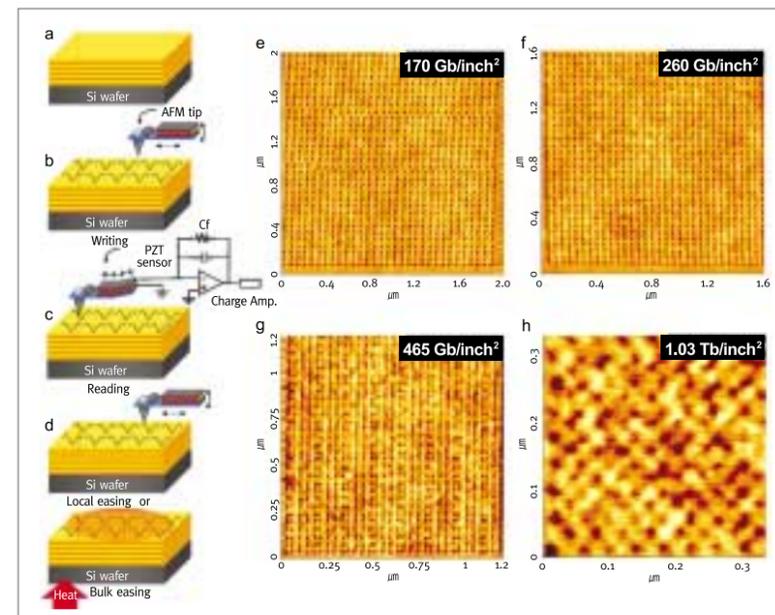
The team found that polystyrene-*block*-poly(*n*-pentyl methacrylate) copolymer (PS-*b*-PnPMA) exhibits baroplasticity properties, and that because of its sensitive transitions to hydrostatic pressure, the microdomain PS-*b*-PnPMA disappears and becomes disordered at the relatively low pressure. By simple

indentation with the AFM tip on the PS-*b*-PnPMA film at room temperature, a nanopattern was generated.

An ultrahigh areal density of up to 1.03Tb in⁻² was achieved, and this value could be increased further if a more sharpened AFM tip is available. The research group also demonstrated that the generated nanopatterns could be transformed into electric signals using a piezoelectric sensing method. Furthermore, local and bulk erasing of the nanopatterns was successfully carried out, and repeated erasing and rewriting processes up to 10 cycles were also demonstrated without any damage to the film.

This newly generated pressure-based phase-change memory at room temperature may expedite the development of a next-generation ultrahigh-density data storage medium. The technology is particularly expected to save energy consumption compared to the existing technology of IBM, whose operation requires a temperature of about 350°C. "Now, we can construct nanoscale patterns using only pressure at room temperature. Our achievement has prepared a technology basis for development of very high scale data storage materials, for which many global enterprises are scrambling," commented Professor Kim.

The results of the study were published in the September 13, 2009, online issue of *Nature Nanotechnology* (2009, vol. 4, no. 11, 727-731) and introduced in News and Views of the same issue (703-704). The work was also highlighted in *NPG Asia Materials* (2010, vol. 2, no. 1, 10).



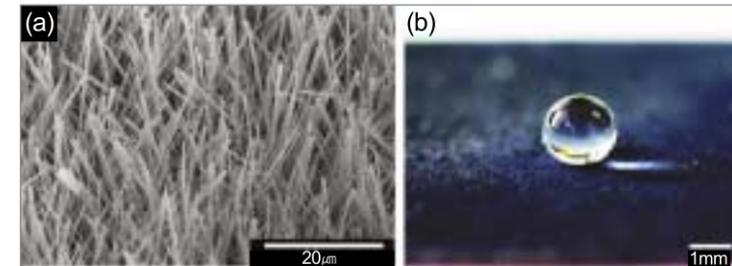
(a-d) Schematic of the fabrication of a nanopatterned surface with an ultrahigh density array of nanoscopic indentations. (e-h) AFM height images of nanopatterns prepared by the indentation of three kinds of the AFM tips.

Water Repellent Surface Now Available for Wider Variety of Industrial Applications



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(a) Scanning electron microscope image of tungsten oxide nanowire array. (b) Photograph of superhydrophobic tungsten oxide nanowire surface.

Professor Kijung Yong (Department of Chemical Engineering) and his group have succeeded in developing an original technology utilizing the lotus effect, which may be used toward development of a variety of applications using coated surfaces.

Leaves of the lotus flower have very high water repellency due to the complex, nanoscopic structure of their surface. Superhydrophobic nanostructured surfaces, such as the lotus leaf, have shown potential for a variety of applications, including microfluidics in biotechnology, fog-resistant coatings, impermeable textiles, anti-contamination, and self-cleaning surfaces.

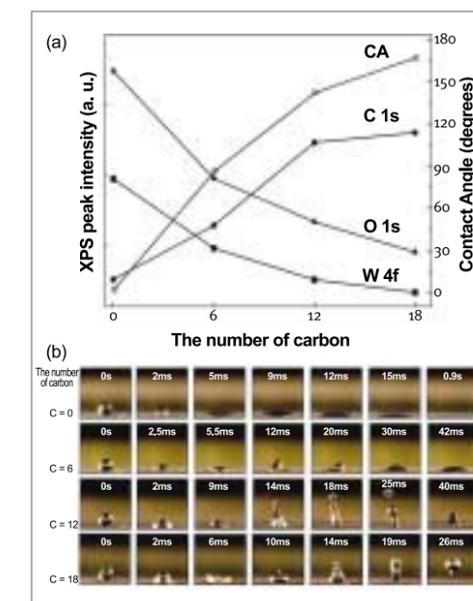
Nanostructures with low surface energies reduce the contact area of water droplets and prevent the penetration of water into spaces between nanoposts of aligned nanostructures under static conditions. However, superhydrophobicity must be maintained under dynamic rather than stationary droplet conditions for practical applications.

Professor Yong and his group conducted a study of the effects of dynamic impacts on tungsten oxide nanostructures having different surface energies due to the adsorption of self assembled monolayers (SAMs) with various alkyl chain lengths. The team also investigated the effects of ultraviolet (UV) irradiation on chemically modified tungsten oxide nanowire arrays, where the photodecomposition of SAMs caused changes in surface energies and the behavior of impinging droplets.

Through the research, three states of wetting - wetting, partial wetting, and bouncing states - were identified through the balance between anti-wetting and wetting pressures, opening up the way for establishment of technology for designing water-repellent surfaces for impinging droplets.

Professor Yong's group made a change in the characteristics of a surface through two separate methods: by the bottom-up way which synthesizes nano-waves, and by the top-down which exposes the synthesized nano-waves to ultra-violet rays. Using a high-speed camera to monitor the variation of a water droplet's dynamic behavior depending on different surface energies, the technology was demonstrated suitable for water-dropping daily conditions.

The results of the study were introduced as the cover paper in the October 12, 2009, online issue of *Applied Physics Letters* (2009, vol. 95, issue 15).



(b) Photographs of a water droplet impinging on the tungsten oxide nanowire surfaces with different surface energies.

A Spoonful of Sugar Makes Life Span Go Down



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Many studies have addressed the effect of sugar in the diet on obesity and diabetes. Professor Seung-Jae Lee (Division of IT Convergence Engineering, Department of Life Science, School of Interdisciplinary Bioscience and Bioengineering) and his group report that it might also be taking years off the life span.

Professor Lee's group, in collaboration with Professor Cynthia Kenyon of the University of California, San Francisco, discovered that glucose inhibits the activities of the glycerol channel in *C. elegans*, shortening the life span of the worm by about 20 percent. The group traces the effect to insulin signals, which can block other life-extending molecular players.

Insulin reduces similar glycerol channels in mammals, suggesting that this glucose-responsive pathway might be conserved evolutionarily. The findings raise the possibility that a low-sugar diet might have beneficial effects on life span in higher organisms.

The research group discovered in the early 90s that mutations that effected insulin signals could double the normal life span of worms. Specifically, a mutation in a gene known as *daf-2* slowed aging and doubled life span. That longer life needed other genes called the FOXO transcription factor DAF-16 and the heat shock factor HSF-1.

Now, the researchers show that those same genes are also involved in numbering the days of worms which are fed on glucose. In fact, glucose makes no difference to the life span of worms that lack DAF-16 or HSF-1, they show. Glucose also completely prevents the life-extending benefits that would otherwise come with mutations in the *daf-2* gene.



A microscopic image of *C. elegans*.

Ultimately, worms fed a steady diet containing glucose show a reduction in aquaporin channels that transport glycerol, one of the ingredients in the process by which the body produces its own glucose: if there is not enough glucose, the body makes it with glycerol. That glycerol has to first get where it needs to go, which it does via the aquaporin channels.

Further studies are needed to see if these same effects of sugar can be seen in mice, or even people. But there is reason to think they may. "Although the mechanism by which glucose shortens the life span of *C. elegans* is not yet fully understood, the fact that the two mammalian aquaporin glycerol-transporting channels are downregulated by insulin raises the possibility that glucose may have a life-span-shortening effect in humans, and, conversely, that a diet with a low glycemic index may extend human life span," the researchers wrote.

The findings may also have implications for drugs in development for the treatment of diabetes, which are meant to block glucose production by inhibiting glycerol channels. The new findings suggest that glycerol channels might be doing something else, and that drugs designed to block them might have a downside.

The results of the study were introduced under the title, "Glucose Shortens the Life Span of *C. elegans* by Downregulating DAF-16/FOXO Activity and Aquaporin Gene Expression" in the November 4, 2009, issue of *Cell Metabolism*, Volume 10, Issue 5, Pages 379-391.

Bridge between Consciousness and Unconsciousness Identified

Despite its potential risks, general anesthesia and how it leads human brain to unconsciousness is still not known. A POSTECH research group has been investigating the nature of consciousness as well as control of the level of consciousness through anesthesia, whose effort has drawn much attention of the academia.

Professor Seunghwan Kim (Department of Physics) and his team, in a joint study with POSTECH graduate Doctor UnCheol Lee of University of Michigan and a Seoul Asan Medical Center team, have presented evidence that the transition from consciousness to unconsciousness occurs by the suppression of the information flow channel in the brain through experimentation with general anesthesia.

The research group derived general anesthesia from injecting propofol into normal people and measured the amount and the direction of information flow both in the frontal lobe, which takes charge of recognition, and in the occipital lobe, which processes sensory information. The result was that the information flow from the frontal lobe toward the occipital lobe decreases at the same time the patient becomes unconscious but the flow in the opposite direction keeps uniform at all times.

This indicates that the information processing which deals with senses from the outside before unconsciousness is performed constantly in the patient's brain under the general anesthetic state, but the information processing after unconsciousness is strongly suppressed. Also, this result is expected to be applied to a new index development to prevent accidents such as awakening during surgery. "Through our research, we have found the clue to solve the many puzzles of consciousness, such as the transitional process from consciousness to unconsciousness," said Professor Kim.

The team also identified that each individual has his/her own distinctive patterns in brain activity, both in conscious and unconscious states. This provides scientific proof for the fact that there exist individual differences in emotional reaction to the same situation such as watching the same movie or experiencing the same social and environmental circumstances.

The world-renowned anesthetist Anthony Hudetz of the University of Wisconsin remarked, in the commentary for the POSTECH team's research, that the findings of the study "opened up a new door to the neurological understanding of anesthesia and consciousness."

The results are expected to contribute to the investigation of the existence and role of the peculiar information flow system in not only the unconscious but also many forms of the conscious state including brain dead, vegetative, sleeping and epileptic.

The findings were introduced as the Target Paper in *Consciousness and Cognition*, Volume 18, Issue 4 (1069-1078).



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Second POSTECH Fellows Selected

Professor Kimoon Kim and Professor Kwang Soo Kim, both of the Department of Chemistry, have been selected as the second POSTECH Fellows.

The POSTECH Fellowship, established in March 2009, was enacted to promote education and research activities of POSTECH faculty. Tenured faculty members are eligible candidates for the Fellowship and its various supports and benefits, which include a special bonus of about 45,000 USD, additional assignment of graduate students, and extended tenure up to age 70.

Professor Kimoon Kim and Professor Kwang Soo Kim are representative members of POSTECH and internationally respected scholars. Their research achievements are of international impact, watched closely by the global chemistry world.

Professor Kimoon Kim, the lead author of the paper most cited among those written by Korean scientists in the last 10 years, is an authority in supramolecular chemistry. His research on development of new bio-nano technology through the use of chiral porosity substances has steadily drawn much attention. Professor Kim is the only Korean among the 100 who have published the most in *Angewandte Chemie*.

Professor Kwang Soo Kim has recently developed nanoscale lenses with novel physical phenomena, an accomplishment admired by not only the chemists but also the world of physics and optics. He is an internationally renowned scholar in quantum and nano chemistry, considered to have opened the new ground of molecular spin engineering. In June 2009, Professor Kim was elected as the first Korean Member of the International Academy of Quantum Molecular Science (IAQMS), the "quantum chemistry hall of fame".

An award ceremony was held on September 1, 2009, for the two Professors, during which Professor Bumman Kim and Professor Gynheung An, the first POSTECH Fellows selected in March 2009, were conferred the Fellowship as well.



From left: Professor Kwang Soo Kim, Professor Bumman Kim, President Sunggi Baik, Professor Gynheung An, and Professor Kimoon Kim

Professor Jin Kon Kim Selected as APS Fellow



Professor Jin Kon Kim (Department of Chemical Engineering) was appointed as Fellow of the Division of Polymer Physics of the American Physical Society (APS).

The APS, founded in 1899, is the world's second largest organization of physicists, second only to the Deutsche Physikalische Gesellschaft. The Fellowship of the APS is given only to those who have passed strict evaluation, the number of Fellows being under 0.5% of the number of the entire members. It is considered the highest honor for scientists in related fields.

Professor Kim has been internationally recognized for his discovery of a new phase behavior of block copolymers as well as significant contribution to the development of the next generation ultrahigh-density storage media.

Professor Kim joined POSTECH in 1993, and has been serving as Editor of the international journal *Polymer*. His awards include 'Scientist of the Month' (2003), and his past positions include Korean Representative of the Polymer Processing Society (PPS) and General Secretariat Member of the PPS Asia/Australia Meeting.

Professor Peter Fulde Awarded by the National Science Council of Taiwan



Dr. Peter Fulde, President of the Asia Pacific Center of Theoretical Physics (APCTP) and Distinguished Professor of the POSTECH Department of Physics, received the 2009 Tsungming Tu Award by the National Science Council (NSC) of Taiwan.

The first Director of the Max-Planck-Institut für Physik Komplexer Systeme (MPI-PKS) in Dresden, Germany, President Fulde received the award for his achievement in the solid-state physics research as well as his contribution to the cooperation and co-research in physics in the Asia-Pacific region.

The Tsungming Tu Award was established in 2006 by NSC and the Alexander von Humboldt Foundation (AvH) to promote joint research between Taiwan and Germany. It was named after Dr. Tsungming Tu who was the pioneer of medical science in Taiwan. In an effort to promote the national development of science and technology, the award is given to foreign scientists of international reputation.

"President Fulde has contributed to remarkable development of natural sciences," Luo-Chuang Lee of NSC said. President Fulde's receipt of the award is expected to raise the international reputation of APCTP as well as promote its further cooperation with the Taiwanese scientific community.

The award ceremony was held at the National Taiwan University on November 4, 2009, at which President Fulde was given the award with the prize money of 75,000 USD.

Professor Kuh Kim Becomes First Korean Recipient of Wooster Award

Professor Kuh Kim, Head of the POSTECH Ocean Science and Technology Institute, received the Wooster Award. The award ceremony was held at the 18th North Pacific Marine Science Organization (PICES) General Meeting held in Jeju Island, Korea, from October 23 to November 1, 2009.

The Wooster Award, established to commemorate the oceanographer Warren S. Wooster, is given to a researcher who has made significant achievement in ocean science and helped promote international cooperation in the field.

Professor Kim gained academic recognition by suggesting East Sea as the miniature ocean that predicts the future of the global climate change. He has been leading the development of PICES through his service as Chairman of the PICES Science Board.

"The ocean is one of the most important research subjects that will help solve the problems of the 21st century, such as climate change, energy, resources, and so on," said Professor Kim, adding, "We need support from the government and the scientific community to further study the East Sea, which is emerging as the sea of global interest."



Professor Kuh Kim [center]

Professor Hyoung Seop Kim Appointed Editor of *Materials Science and Engineering: A*



Professor Hyoung Seop Kim (Department of Materials Science and Engineering) has been elected as Editor of *Materials Science and Engineering: A* (Impact Factor of 1.806), published by Elsevier, the world renowned publication company of research journals. *Materials Science and Engineering: A* covers theoretical and experimental studies related to the capacity of materials as influenced by their basic properties, processing history, microstructure and operating environment.

Professor Kim is the only Korean Editor of the journal. Professor Kim has been acknowledged and awarded several times for his achievement in research on nano materials, and his paper "A Comment on the Role of Frank-Read Sources in Plasticity of Nanomaterials" was elected as the best paper among the Top 25 Hottest Articles of *Acta Materialia*. He has been teaching at POSTECH since 2008.

POSTECH Student Team Awarded at EuroMOT 2009

A student team of the POSTECH Department of Industrial and Management Engineering won the Doctoral Student Runner-Up Award at the 4th European Conference on Management of Technology (EuroMOT 2009) hosted by the International Association for Management of Technology (IAMOT).

The Conference was held on September 6 through 8, 2009, in Glasgow, United Kingdom, and the POSTECH team consisting of Mr. Sungchul Choi, Mr. Janghyeok Yoon, and Mr. Hongbin Kim, all under the tutelage of Professor Kwangsoo Kim of the Department of Industrial and Management Engineering, presented their research titled "A Function-Based Technology Foresight Methodology."

In the paper, the students analyzed the contents of the innovations by their functions, summarized and made abstracts, and combined all the information by the technology foresight process. Through this process, they suggested a new methodology to predict the pattern of technological progress. "Technology foresight" is regarded as the most upstream part of the technology development process, as it provides inputs for the formulation of technology policies and strategies that guide the development of the technological infrastructure.

This marked the third award the team received for the research. The previous two honors were awarded by the Korean Ministry of Knowledge Economy and the Korean Intellectual Property Office.



From left: Mr. Hong Bin Kim, Mr. Jang Hyeok Yoon, Professor Kwangsoo Kim, and Mr. Sung Chul Choi

Professor Seong Jin Park Receives Powder Metallurgy Biannual Best Paper Award



Professor Seong Jin Park (Department of Mechanical Engineering), with his co-publishers of Oregon State University and San Diego State University, was elected as the recipient, of the Biannual Best Paper Award (2007-2008) by the journal *Powder Metallurgy*.

Powder Metallurgy is an international journal publishing peer-reviewed original research on the science and practice of powder metallurgy (PM) and particulate technology, as well as the news of technological and commercial developments in the industry and PM community.

The Particulate Engineering Committee of the Institute of Materials, Minerals, and Mining, which evaluated the papers for this award, selected Professor Park's paper in recognition of its identification of the critical process conditions in powder injection molding (PIM) of microsystem components.

The state-of-the-art program named PIMSolver that was used in the research was created by the Professor Tai Hun Kwon and his team of the POSTECH Department of Mechanical Engineering. With the recognition of Professor Park's research, PIMSolver is now widely known as the world's leading Computer Aided Engineering (CAE) analysis software.

Professor Park, the first valedictorian of POSTECH, is continuing his research on the applications and related simulations of PIM.

POSTECH Graduate Wins HFES Best Student Paper Award



From left: Professor Heecheon You and Doctor Kihyo Jung

Doctor Kihyo Jung (Department of Industrial and Management Engineering) won the Alphonse Chapanis Best Student Paper Award at the 2009 Human Factors and Ergonomics Society (HFES) Academic Conference held from October 19 to 23, 2009, in San Antonio, United States.

Doctor Jung's paper titled "Development of the Boundary Zone Method for Generation of Representative Human Models" drew attention by suggesting a new multivariate analysis method to create a digital human model which is based on the statistical theory. This method can be used in designing and evaluating user-oriented products in the digital design technology platform.

The HFES was founded in 1957, and operates today more than 50 active chapters throughout the United States, Canada, and Europe.

Doctor Jung's advisor, Professor Heecheon You (Department of Industrial Engineering), also won the same Award in 1999.

Graduate Students Win Outstanding Poster Award at Asian Symposium on Magnesium Alloys

Mr. Byeong-Chan Suh and Mr. Myoung-Shik Shim, both graduate students of Professor Nack Joon Kim of the Department of Materials Science and Engineering, were awarded the Outstanding Poster Award at the 3rd Asian Symposium on Magnesium Alloys held on September 21 through 23, 2009, at the Institute of Metal Research, Chinese Academy of Sciences (IMR CAS).

In their paper titled "Deformation Behavior of Twin-roll Cast Mg-4Zn-1Gd Alloy Sheet," investigated the effect of the activation of mechanical twinning such as Rare Earth Element and improvement it made for the ductility and formability of Magnesium (Mg) alloys. Mg alloys, known as the lightest commercial alloys developed so far, have great potential for high performance aerospace and automotive applications.

Among 254 posters exhibited in the poster session, 6 were awarded.



Mr. Byeong Chan Seo

Mr. Myeong Sik Shim

First Overseas Office Open in Beijing



President Dong Jin Kim of POSCO-China and POSTECH President Sunggi Baik (center)

POSTECH opened its very first overseas office in Beijing, China, on October 30, 2009, in an effort to globalize its capacity as the leading university in Korea, and to attract more qualified foreign students.

The opening ceremony was held in celebration of the new office, followed by a briefing session for

the representatives of the 13 Chinese sister universities, with the purpose of attracting the top Chinese students to continue their studies at POSTECH. Professor Moo-Hwan Kim, Dean of Admissions, presented an overview of POSTECH, including the university's current status and admission requirements.

POSTECH currently has 73 sister universities in 19 different countries, and 13 of them are in China, the largest number for any single country. All members of the 'C9 League,' which refers to the 9 most prestigious universities in China, are included in POSTECH's 13 Chinese partners.

Launching the POSTECH Beijing Office is expected to activate various academic collaborations and exchanges with the top-class universities in China. Opening overseas offices is part of the University's globalization project, the main goal of the POSTECH Vision 2020. More local offices in the United States and Europe are already in the process of opening in the near future.

President Sunggi Baik commented in his congratulatory address for the inauguration of the POSTECH Beijing Office, "Today, we have established a stepping stone for POSTECH to become a world-class university, and we will put our efforts together to attract more students from all around the world."

POSTECH to Collaborate with RIKEN Spring-8 Center

POSTECH, with its well-known nation's only synchrotron radiation source laboratory (SRL), has concluded a Memorandum of Understanding (MOU) on research cooperation with the RIKEN SPring-8 (Super Photon ring-8 GeV) Center of Japan, which has the world's biggest SRL, on October 5, 2009. Both agreed on the specifics of researcher exchange, use of laboratory facilities and equipment, and co-hosting of seminars and conferences. When this MOU comes into effect, a remote lab with the 4th generation synchrotron radiation will be built at the RIKEN Spring-8 Center. Also, a laboratory will be built at POSTECH for RIKEN researchers.

RIKEN is located in Wakou, Japan, and operates under the Japanese Ministry of Education, Culture, Sports, Science and Technology. It is one of the best basic science and high technology research institutes in Japan, and has five independent research facilities throughout the country. The SPring-8 Center of the RIKEN Harima laboratory is the world's biggest SRL, which is expected to complete its building of an X-Ray Free Electron Laser (XFEL), the 4th generation accelerator.

The MOU between RIKEN and POSTECH is anticipated to facilitate further cooperation and co-research between Korea and Japan. A joint workshop was held at the Spring-8 Center on October 5 and 6, 2009, in commemoration of the conclusion of the MOU, with the two institutions' scholars present, including President Sunggi Baik of POSTECH and Dr. Tetsuya Ishikawa, Head of RIKEN.



From left: POSTECH President Sunggi Baik and RIKEN Spring-8 Center Director Tetsuya Ishikawa

President Baik Speaks at 2009 QS-APPLE Conference



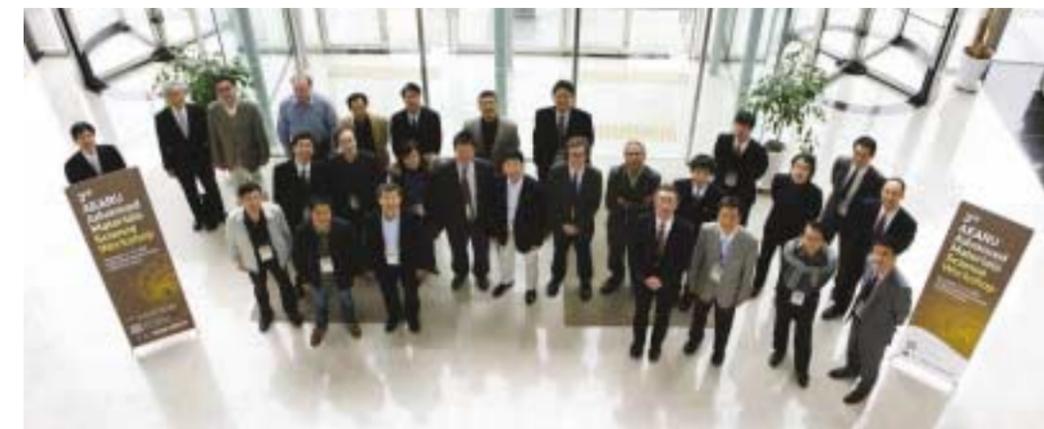
POSTECH President Sunggi Baik delivered the keynote address titled "Building a World-class University through Globalization, and POSTECH's Experience" on November 24, 2009, for the 2009 QS Asia-Pacific Professional Leaders in Education (QS-APPLE) Conference held in Kuala Lumpur, Malaysia.

QS-APPLE Conference is a three-day annual conference, held in different cities of Asia each year to build world class universities for Asia-Pacific communities through global partnerships and collaboration. QS, the host and the organizer of the Conference, is a networking company for higher education institutions around the world.

President Baik emphasized in his speech the importance of campus globalization for a university in order for it to advance, and suggested some practical applications.

After the Conference, President Baik went on to Singapore to visit the National University of Singapore and Nanyang Technological University, the two leading universities of the country, as well as some laboratories in Biopolis, the high-tech biomedical research park built by the Singapore government.

The 3rd AEARU Advanced Materials Science Workshop Held at POSTECH



The 3rd Association of East Asian Research Universities (AEARU) Advanced Materials Science Workshop, jointly hosted by POSTECH, Nanjing University of China, and Tohoku University of Japan, was held for three days at the POSCO International Center on November 11 through 13, 2009.

The workshop was held not only for the AEARU member universities, but also for the researchers

throughout the world in the related field. Professor Martin Vacha of the Tokyo Institute of Technology, Professor Iam Keong Sou of the Hong Kong University of Science and Technology, and Professor Ge Hai-Xiong of Nanjing University were among the participants of the workshop, which focused on newest progress and information related to advanced materials science, covering three main subjects of: innovative materials for nano-photonics,

self-assembled materials for green applications, and high-tech optical materials.

AEARU was established in 1996 to promote exchange and research collaboration among East Asian research-oriented universities. The 17 members of Korea, Japan, China and Taiwan's leading universities cooperate through various activities in which POSTECH actively participates.

Admission Rate of 16.6% for 2010 Undergraduate Applications

The average ratio of applicant to opening for undergraduate admission at POSTECH for the 2010-2011 academic year turned out to be 6 to 1 (1,814 applicants for 302 openings). The large number of applications reflects the high interest of students and parents in the new Admissions Officer System, which POSTECH has adopted for the first time in the Korean higher education history.

POSTECH distinguishes itself from other Korean universities, which have also taken the Admissions Officer System to be but a part of their admissions system, in that it selects all of its 300 incoming freshmen through the new System.

With the Admissions Officer System, POSTECH does not require any standardized test scores, including that of the national college entrance exam: based on the comprehensive evaluation of high school records, personal essay, recommendations and other supplementary documents, qualified applicants, approximately 3 times the number of the openings, are selected for an interview. These selected applicants then take the interview and the oral tests, through which their understanding of the curriculum, application of basic knowledge, and logical assessment of the problem are examined. The full-day interview includes evaluation of applicants' aptitude in mathematics and science as well as general potential to grow into global leaders in science and technology.

The admission rate for each department was evenly matched for the academic year of 2010-2011. The Department of Life Science was the most competitive with 183 applicants for 20 openings (10.9%). Following were the Department of Physics with 116 applicants and 15 openings (12.9%), the Department of Mathematics with 111 applicants and 16 openings (14.4%), and the Department of Mechanical Engineering with 318 applicants for 50 openings (15.7%).

Korea and Japan's Best Immunology Labs to Join Hands

The Immunology Frontier Research Center (IFReC) of Osaka University, Japan, and the Division of Integrative Biosciences and Biotechnology (IBB) of POSTECH signed a memorandum of understanding (MOU) to explore strategic collaboration in immunology. The signing ceremony was held on November 11, 2009, at the POSTECH Biotech Center.

The new alliance is considered significant in that it is the joining of the two institutions that are supported by the two countries' government projects: World Class University (WCU) of Korea and the World Premier International Research Center (WPI) of Japan.

The WCU is a government funded project established to foster top-tier basic science research in Korea by recruiting international scholars of world distinction. The Korean Ministry of Education, Science and Technology (MEST) supports selected institutions, including the POSTECH IBB, under the WCU project.

Similarly, IFReC was selected by the Japanese Ministry of Education, Culture, Sports, Science, and Technology (MEXT) as one of the nation's five exclusive institutions chosen for the WPI program. The Center was established on October 1, 2007, and has been engaging in high level research on immunology in an effort to become an internationally renowned institution.

Through this partnership, the POSTECH IBB expects to obtain some original pharmaceutical and medical technologies related to the biomembranes. "Through this MOU, we will be able to improve our current studies on molecular biology," Professor Inhwan Hwang, Chairman of IBB, commented, adding, "As we exchange outstanding researchers and facilities, the collaboration will contribute to our present research on visualization of the body immune system via convergent study of medicine, natural sciences, and engineering."

Autodesk Donates Software Worth 40 Million Won to GWE

Autodesk, the world's largest architecture and design software company, whose software is used by more than 9 million users throughout the world, donated software worth 40 million won to the POSTECH Graduate School of Wind Energy (GWE) on October 13, 2009.



Donation ceremony held on October 13, 2009

Professor Kyung Seop Han, Dean of GWE, said that the School received 3D CAD software called Inventor from Autodesk. This donated software will be used for training students in designing an aero generator.

"We have seen POSTECH nurturing their young talented students in the field of wind energy, which is one of the major green industries for the future. We are impressed by the passionate professors, dedicated to their research and education," Director Sang Hun Lee of Autodesk Korea stated as the reason for the donation.

Professor Hyun Chul Park of GWE delivered the appreciation plaques to Director Sang Hun Lee and Mr. Du Chan Kim of Autodesk, expressing gratitude of the School and the University, and addressed their resolution to develop a world-level wind energy system.

First Honorary Doctorate in Engineering Awarded to Jeong Hun Kim at the 21st Commencement Ceremony

POSTECH's 21st Commencement ceremony took place at the gymnasium on February 17, 2010. Including President Sunggi Baik, Chairman Ku-Taek Lee, and Founding Chairman Tae-Joon Park, 2,500 members and guests of the University participated in the ceremony. Three hundred and twenty seven bachelors' degrees, 222 master's degrees, and 185 doctorates, all totaling 734 degrees were conferred during the ceremony.

This year's top of the undergraduate graduating class was Ms. Ji Yeon Han (Department of Chemistry) who scored a grade point average (GPA) of 4.19 out of 4.3. The Hogil Kim Award, presented to an esteemed student for bringing respect and honor to the University, was awarded to Ms. Miri Choi (Department of Materials Science and Engineering), who had been President of Student Council since 2008.

During the ceremony, President Sunggi Baik addressed the students to have leadership and mission for society, adding, "Do not limit your interests. Expand the boundaries to the universal problems such as climate change, energy, and environment. Pursue further education for your life. And keep your integrity all the while."

Also at the ceremony, Dr. Jeong Hun Kim, President of Bell Labs at Alcatel-Lucent, the world best information research laboratory, received POSTECH's very first honorary doctorate in engineering. Dr. Kim completed his undergraduate degrees in electrical engineering and computer science, and master's degree in technical management, all from the Johns Hopkins University, and received his Ph.D. in reliability engineering, the first doctorate in that field awarded by the University of Maryland. Dr. Kim is known for his great achievements with his own company, Yurie Systems: it made a huge success in wireless devices, and Lucent paid over one billion US dollars to take over the company. Dr. Kim became a professor at the University of Maryland in 2001, and he has been serving on the boards of many academic, corporate, and non-profit organizations.



Chairman Ku-Taek Lee, Founding Chairman Tae-Joon Park, and President Sunggi Baik congratulate new graduates.



Bell Labs at Alcatel-Lucent President Jeong Hun Kim (left)



21st Commencement ceremony held at the gymnasium

Fresh Memories of Columbia University

Sun Kook Lee

Department of Chemical Engineering
Senior



There is a saying in POSTECH, "Postechian, who has never been to a foreign country, is a fool." This is because the school offers more opportunities for students to go abroad than other universities. Not to miss a chance, I had applied to one of the POSTECH summer abroad programs. The school I decided to go to was the Columbia University. Though I was aware of its high tuition as one of the Ivy leagues, and the living expense of Manhattan would also not be cheap, I thought the experience I would get was worth it. American Language Program (ALP) summer session C was where I applied, and I took a placement test on the internet before I

went to the school, so my level was already assigned when I got there.

Before I had entered into the classroom, I expected to see many Koreans, but there weren't many due to the influenza A and the high exchange rate. In my class, only two of us were Korean, and the other guy was doing his doctorate. A great part of classmates was Italians and some Taiwanese students were there. At first, it was difficult to get along with them, because they mostly spoke to each other in their own languages. However, I didn't give up making friends with them. Also, we were assigned to do the team presentation every week, so it helped us to get to know each other. I took reading, writing, listening, and grammar classes, 18 hours a week. The classes were in different buildings on campus, so I could have a chance to experience different class environment. Every class had its own assignments, so I spent most of time at the library. The Columbia had various libraries including the central library, Butler, and so on. Each department had their own library, so we could choose where to go to.

Like most students did, I lived in a dormitory. I shared a room with a Chinese student. Though some facilities could have been improved compared to the ones in POSTECH, the dormitory was generally well-equipped. I especially liked

the gymnasium, the Dodge Fitness Center. I was impressed by how large a sport facility could be. I've heard that the swimming pool there was where the famous American swimmer, Michael Phelps, used to come to practice.

Sometimes I used to go to a museum with my classmates as a field trip. The Metropolitan Museum of Art, also known as "the Met", is one of the world's largest art museums. I saw many American decorative art pieces, and I could learn the history of American arts. I was able to introduce Korean culture to my friends, when we visited the Korean art section. We have also been to the Museum of Modern Art (MOMA), which has many art works of famous modern artists such as Jackson Pollock and Andy Warhol.

Near my school, there was the notorious Harlem area. When I went to bed at nights, I could hear the sounds of ambulances and the police cars. I wasn't sure where they were coming from, but I just imagined they were from Harlem. One day, I took courage to walk across the Morningside Park, the east side of the campus. But as soon as I saw some gang hanging out on the street, I ran away out of fear. Looking back then, I think they were nothing to be scared of.

After classes, my classmates and I often went sightseeing around Manhattan, since the subway station was right in front of the campus. For example, it only took about 15 minutes to go to the Times Square by subway. At the Time Square, there were a huge number of animated neon and LED signs which we often see on television. Above all, some signs of Korean companies, such as Samsung and LG, could easily be seen, and it made me feel proud of being a Korean. On the Broadway, we saw 'The Phantom of the Opera,' one of the longest running Broadway musicals. Also, we used to go for a walk in the Central Park, and many other landmarks such as the Statue of Liberty, Wall Street, the Empire State Building, and the World Trade Center, which was still under a construction. Moreover, there were many museums and art galleries in Manhattan we could enter free by showing them the Columbia University student identification card.

On the last day before I left I went to watch a

baseball game at the Yankee Stadium with my friends, a big match between the New York Yankees and the Boston Red Sox. The new Yankee Stadium was opened in 2009, so it was very sleek and clean. Most of all, it was great to be able to see the major league players right in front of my eyes. We bought the Yankees baseball caps and cheered on the Yankees vigorously. Both teams had put up a good fight, and none of them were scoring due to each others' tenacious defense. Finally, in the bottom of the 15th, Alex Rodriguez of Yankees slammed a homer and ended the game. It took 5 hours and 33 minutes to finish the match. Luckily, the New York City subway runs 24 hours a day, so we could safely get back home that night.

Though it was a short summer, it was one of the best summers making friends from different countries around the world and experiencing foreign cultures. I've learned a lot from a confident attitudes and high self-esteem of my foreign friends, and it made me look back on myself. I am grateful to POSTECH for giving me this opportunity, and I would encourage other students to explore other cultures to learn and to grow as citizens of global community.



No Place Is Better Than Right Here; No Time Is Better Than Right Now

Zou Jing

Department of Chemical Engineering
Ph.D candidate

The first time I heard about the POSTECH was in November, 2006, when Ms. Jung-Hee Yang and Ms. Sunyi Mun came to the Harbin Institute of Technology. According to her introduction, the POSTECH is one of the top research universities in Korea, and it has the best research facilities such as the Pohang Accelerator Laboratory and the Nano Center. Ms. Yang and Ms. Mun were very kind answering to all of my questions in details. At that time, I started to dream of studying my master's degree in the POSTECH.

In 2007, I came to the POSTECH, met some new friends, started a new research topic, read new books and faced many difficulties in Professor Chung Jongsik's FREE lab. I have to admit that it was not all easy at first. I am just a flimsy girl. At times, I just wanted to run away from the academic pressures and my monotonous life. Thankfully, my Chinese friends have always encouraged me saying, "no place is better than right here, no time is better than right now," and "just hang on, and enjoy." So, even after I finished 2 years of master's program, I continued my study here not only for a good academic environment but also for an inclusive people. I have also got to enjoy the freedom and passion of the POSTECH life. I have been getting used to live in the POSTECH day by day.

One day at the end of the 3rd semester, I ran into three Vietnamese students outside of my lab. They were looking for a group of people to sing a Korean song, "My Love" with them for the 2008 POSTECH International Night. I was very interested in what they said and asked if I could join. They welcomed me without any hesitation. We went

to the Karaoke Hall to get familiar with microphones and musical instruments. We changed some lyrics into Vietnamese and Chinese so that the song would sound more interesting and "international." To impress the judges, we also put on our own traditional national costumes. After about one week of practice, we were up on the stage in front of more than 200 people. I still remember the performance of that night vividly. My friend Lan's pink Ao-dai and her pearly hairs were so shiny and charming; Toan and Tong looked a little bit nervous in their formal clothes and I felt cold in my sleeveless chi-pao. When we finished the performances, we'd got applause from the audience and won the first prize! Several days later, we used up the entire prize money buying beers for all the foreign students at the log cabin, and everyone seemed so happy. More than one year has passed by, and some of us are not with us anymore. Whenever we meet again, however, we would recall the inspiring memory of that night. Here, I want to send my regards to my friend Lan, "Long time no see, how's your new life in the US?"

Besides the activities held by the International Relations Office, my lab has also had some regular gatherings and outings. For example, we went to the Songni Mountain last September. It



Zou Ling (right)



was a very attractive place. From the red maple and yellow ginkgo leaves to the lucid spring water and jagged mountain tops, it was a best landscape painting. We were enjoying our relaxed time of laughter, talking to each other. Everyone looked so happy.

In daily life, I have learned to amuse myself around this beautiful campus. On weekends, I would like to take a walk to Yongil-Dea to enjoy Sakura flowers of spring, and on cold winter nights, I like to go for a glass of Soju in the log cabin with my lovely friends. In my lab, I have overcome my shyness and became more cheerful making jokes and actively engaging in discussion with my lab members. The most important change is that I like Korean foods now. Chicken Ginseng Soup, Dolsot Bibimbap, Galbi and Galbitang are some of them and I want to try everything I can. The best way to change my heart was through my belly. In order to know more about Korean culture, I have also traveled to several different cities, such as Gyeongju, Busan, Daejeon, Daegu and Seoul.

All the Korean people I've met are so friendly. Every time I get lost, or have difficulties in communication, they have helped me. On one night in September, 2007, when a fierce typhoon attacked Pohang, I was just coming out of my

friend's house. There were puddles everywhere on the road made it hard for me to get back to my dorm. When I stumbled and fell on a puddle, a car parked up on my side of the road. A young lady let me get in her car and took me to the school. Such things kept happening again and again. I can hardly thank them enough.

As the first foreign country I have ever been to, I should thank to Korea for the experience I cannot forget for my life. I thank Korea for nurturing excellent young people in a university like the

POSTECH, and I thank her for giving me a precious chance to experience different cultures. Besides, I have to tell that I appreciate all the works of the POSTECH International Relations Office so much. Without their inspirational services and creativities, there would have not been even a small window for us as foreign students through which we could look out this beautiful country.

