KIST SCHOOL

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Beyond the M.I.R.A.C.L.E. with P.R.I.D.E

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THE KOREA INSTITUTE OF SCIENCE AND TECHNOLOGY

KIST Korea Institute of Science and Technology

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SCHOOL

The Korea Institute of Science and Technology

Beyond the M.I.R.A.C.L.E with P.R.I.D.E

The Korea Institute of Science and Technology (KIST) is the premier multidisciplinary research institute in Korea, and its aim is to create a better future by improving the quality of life for everyone.

KIST was established in 1966 as the first government-funded research institute in Korea. The history of KIST is the history of Korean development in the aftermath of the devastation caused by the Korean War. In 1960, when Korea embarked on its national development plan and laid the foundation for a new research institute, it was one of the poorest countries in the world. Now, it boasts the world's 11th biggest economy thanks to its advancements in the field of science and technology.

As a result of focusing on frontier and global-agenda research by concentrating on large-scale, long-term, interdisciplinary R&D projects to increase Korea's R&D capacities in the field of S&T and to nurture promising young talent, in March 2017, KIST was ranked by Reuters as the world's 6th most innovative research institution for the second year in a row.

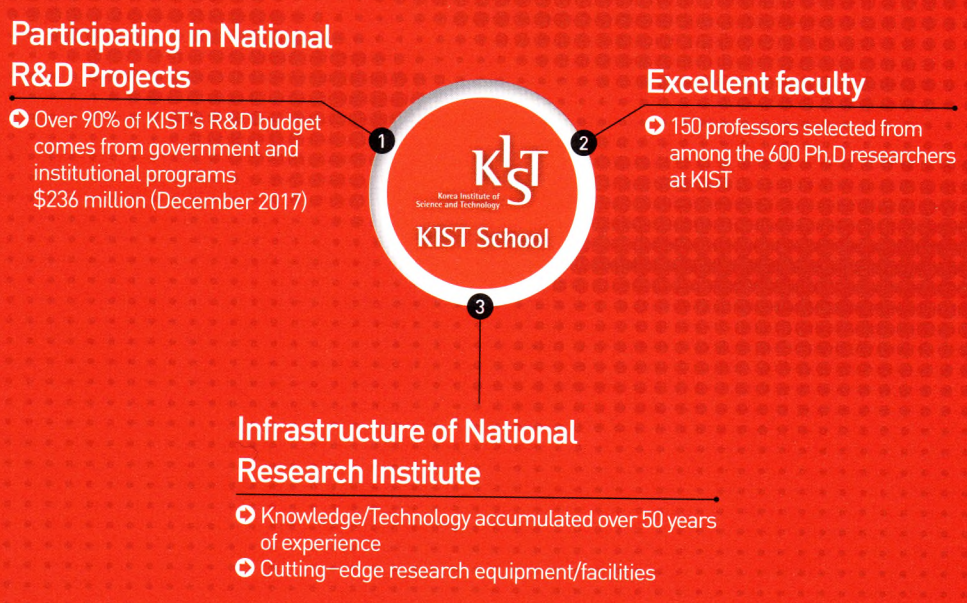
Because KIST was founded with assistance from foreign aid, KIST feels it is time to return the favor by disseminating the KIST model of science-based official development assistance (ODA) in hopes of giving back to the global community.

Change begins with education. KIST offers several unique graduate-level programs to help students, both domestic and foreign, gain the knowledge and practical research experience that will equip them for success as scientists and engineers in specialized S&T fields. Students at KIST School are carefully selected for participation in R&D projects at KIST's research centers—projects that closely correspond with the students' respective fields of study. By allowing students to immerse themselves in S&T research under the close supervision of their advisors, KIST is fostering a new generation of S&T leaders capable of creating a brighter future.

The Korea Institute of Science and Technology School

Pride, Convergence, Community - Radiate the Spirit of Success!

Since 1991, KIST has dedicated itself to educating talented young professionals. KIST School has taken full advantage of KIST's vast experience in the creation and operation of graduate schools. The primary goal of KIST School is to educate future global leaders in S&T research. To do that, we offer three interdisciplinary educational programs backed by more than 50 years of top-notch research and educational experience.



Message from the KIST President

Dear students,

Welcome to the Korea Institute of Science and Technology (KIST), the cradle of the Korean Science and Technology.

KIST has continually worked to enhance the quality of life for people around the world, and to realize a national economy based on S&T.

KIST was founded in 1966 as Korea's first government-funded research institute. Since then, it has played a leading role in the country's economic development. Many Korean government-funded research institutes were modeled after KIST, resulting in KIST setting the standard for national S&T strategists.

In February 2016, KIST celebrated its 50th anniversary. We are now transforming our research model to ensure that the next 50 years are met with even greater success. For example, we shifted our focus to such global issues as aging societies and energy/resource shortages while also pushing the limits of convergence science and open cooperation in order to open up a new scientific frontier.

Given that KIST was established with the help of foreign aid, the time has now come for us to return the favor by disseminating the KIST model to other countries. We believe that S&T will be the primary economic engine for future generations. Hopefully, other countries will utilize it for bettering their own communities and, in turn, the world. For this reason, we support KIST graduates in returning to their native countries and creating new labs with help from KIST in regard to internal funding, scientific cooperation, ODA projects, etc.

As always, KIST remains devoted to the cultivation of world-class scientists and scientific partnerships. Please join us in astonishing the world with our triumphs!

Dr. Lee, Byung-Gwon
President

Message from the Dean

Dear prospective KIST School students,

KIST has been developing scientific and strategic approaches to urgent issues many countries are currently facing, such as matters pertaining to environmental safety and public health. Such issues are being addressed through cutting–edge new technologies developed at KIST by Ph.D.–level researchers trained from universities all over the world. KIST School's 150 faculty members were selected from among KIST's 600 P.I.s, making them one of the youngest and most adventurous faculties in Korea. Their competitive edge has been amply demonstrated by their innovative outcomes and recently–published scientific articles for renowned academic journals, which helped KIST in being ranked by Reuters as the 6th most innovative institute in the world. KIST School provides its students with a bird's–eye view of current scientific problems, equipping them with the specialized knowledge and expertise needed to address them. Research fields in KIST are categorized to three majors, Bio–Medical Science & Technology, Energy & Environment Technology and Nano & Information Technology.

KIST's infrastructure and research facilities allow students to stay abreast of cutting–edge technological developments, and KIST boasts both an invaluable staff and the latest in high–tech instruments, such as the ion beam accelerator, 800 MHz NMR, high resolution TEMs and so on.

In addition to all of this, KIST School often provides full scholarships in order to build strong international networks. It maintains the best–balanced graduate program in Korea, with a student/faculty ratio of 2:1 and a domestic/foreign student ratio of 1:1. International students from dozens of different countries are given the opportunity to work with Korean colleagues and enjoy the dynamic culture of Seoul while simultaneously influencing and inspiring each other to achieve academic excellence. Although most classes at KIST School are conducted in English, we supply a terrific Korean language program so that international students can more easily acclimate to Korean culture and remain in touch with KIST well after graduation. And although KIST School has made great strides in the area of international cooperation, we are always looking for ways to push the envelope even further. Last year, for example, we initiated the KIST School Internship Program' which will enable us to further expand our cooperative networks into Central Asia, Eastern Europe, Southwestern Asia, and beyond.

We are seeking pioneers from around the world to join us in facing global challenges together. Our goal is to make the world a better place—not just for the citizens of any particular country, but for all of humanity.

Dr. Kim, Sang Kyung
Dean

Status

We have students from 25 different countries and they are being educated by outstanding professors.
The domestic/foreign student ratio is almost 1:1

(March 2018)

	Majors	Faculty	Students
Bio–Medical Science & Technology	57	132	
Energy& Environment Technology	40	72	
Nano&Information Technology	48	73	

International Cooperation

We have eleven partner countries to foster global leaders and to provide them with the highest quality education which will help them build up the capacities of their native countries.

- Thailand, Asian Institute of Technology (AIT) ('00)
- Ukraine, Nat'l Tech. U. of Ukraine Kiev Polytech Institute (NTUU–KPI) ('01)
- China, Lanzhou University ('04)
- Russia, Novosibirsk State Tech University('07)
- China, Peking University ('07)
- Belarus, Belarusian National Technical University ('13)
- Ukraine, National Technical University Kharkiv Polytechnic Institute ('15)
- Czech Republic, Czech Technical University ('15)
- Germany, Saarland University ('16)
- Czech Republic, Charles University ('16)
- Uruguay, National Research And Innovation Agency ('16)
- Japan, Tohoku University ('16)
- Indonesia, Universitas Indonesia ('16)
- Belarus, National Academy of Science of Belarus ('17)
- Mongolia, Mongolian Academy of Science ('17)

Programs

Degree Program

Degrees

· Master's Program / Doctoral Program

Semesters

· Spring Semester begins in March, Fall Semester begins in September.

English Language Requirements for Admission

Type	Minimum Scores Required					
	TOEFL			TOEIC	TEPS	IELTS
	iBT	CBT	PBT			
Score	79	213	550	730	630	6

※ All test scores should be dated within 2 years of the application deadline.

· Waiver of English score requirement
Applicants with a bachelor's degree or higher who studied for over a year in an English-speaking country such as the US, UK, Canada, Australia, New Zealand, Ireland, or South Africa.

Dual Degree Program

As a leading research oriented Academy in science and technology, KIST School aims to provide real research and development experience to those students from overseas countries through intensive graduate level education, and to bring them up as competent engineers and scientists.

Eligibility

· Applicants who have fulfilled their coursework requirements from Partner University with a cumulative GPA of at least 4.0 out of 5.0, will be entitled to enroll in the equivalent M.S. or Ph.D. degree program at KIST School.
· The required language is English. Students who have a TOEFL score of CBT 213 or higher or other equivalent scores such as IELTS or TOEIC will be considered qualified.

Period

· Spring Semester begins in March, Fall Semester begins in September.
· Students should study at KIST for at least one year for an M.S. or M.E. degree and two years for a Ph.D. degree.

Internship Program

KIST School provides 6 to 9 month-long internship for outstanding applicants, and it offers English classes (to help students getting an official English score for entering Masters and Doctoral degree courses), a Korean language program, and R&D field training. Students' English scores must meet the minimum requirements in order for them to qualify for the KIST School Internship program.

Eligibility

· Must have a bachelor's or master's degree, or be expected to receive one
· Must get an official recommendation from the country

Period

· Runs two times a year, Begins in January and July

Majors _ Chief major professor

Division of Bio–Medical Science & Technology

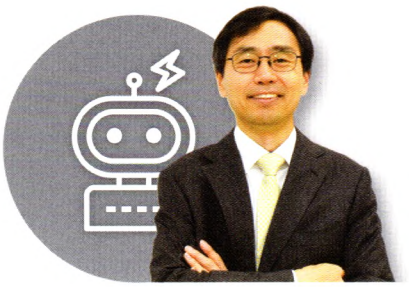
Park, Kwideok

Field of Research Tissue engineering, Extracellular matrix (ECM) engineering, Stem cell bioengineering
Telephone 82–2–958–5288
E–mail kpark@kist.re.kr

Division of Energy & Environment Technology

Lee, Hyun Joo

Field of Research Homogeneous & Heterogeneous catalysis for methane and CO_2 conversion, Chemical conversion of biomass, Ionic liquid
Telephone 82–2–958–5868
E–mail hjlee@kist.re.kr



Division of Nano & Information Technology

Ahn, Sang Chul

Field of Research HCI (Human Computer Interaction), Augmented Reality, IBMR (Image Based Modeling and Rendering)
Telephone 82–2–958–5777
E–mail asc@kist.re.kr

Division of Bio–Medical Science & Technology

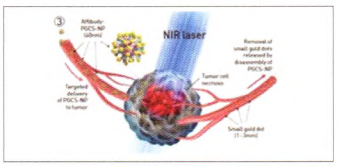
Bio–Medical convergence major covers multi–disciplinary fields which consist of three sub–majors including Biological Chemistry, Biomedical Engineering and Neuroscience. Biological Chemistry focuses on new drug discovery based on the understanding diverse life phenomena using an integrated approach of biology and chemistry. Biomedical Engineering is dedicated to the development of advanced tools and knowledges that can be applied for medical treatments and early diagnosis in clinics. Neuroscience investigates unknown mechanisms underlying human cognition and brain disorders to find new treatment drug and technology. Bio–Medical convergence major provides top class atmosphere and opportunity for cutting edge researches in biomedical science and technology.

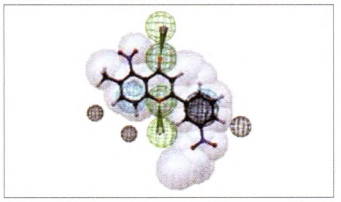
Concentration

- Biomedical Engineering
- Biological Chemistry
- Neuroscience

Main Issues

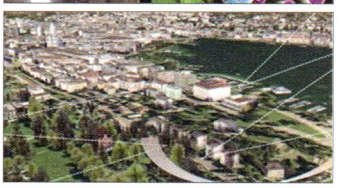
- Proteomics–based identification and validation of novel plasma biomarkers phospholipid transfer protein and mannan–binding lectin serine protease–1 in age–related macular degeneration (Scientific Report 2017)
- Timely regulated sorting from early to late endosomes is required to maintain cerebellar long–term depression (Nature Communication 2017)
- An injectable hydrogel enhances tissue repair after spinal cord injury by promoting extracellular matrix remodeling (Nature Communication 2017)

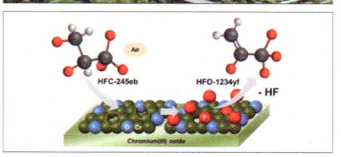




Division of Energy & Environment Technology

Currently, the biggest social and academic issues in the world are related to the development of renewable energy and the creation of a clean environment. In order to realize a sustainable green society sometime in the future, it is necessary to approach these issues with an integrated perspective. The Energy–Environment Convergence Major aims to resolve future energy and environmental issues through integrated research into energy engineering and environmental engineering. The Energy major educates students on the principles, manufacturing, storage, and utilization of energy. The Environment major educates them on the atmosphere, water, environmental sensors, and toxicology. We aim to produce outstanding researchers who have the expert knowledge and practical skills to solve energy and environmental problems around the world.





Concentration

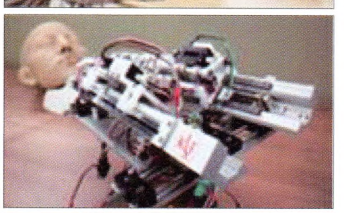
- Energy Engineering
- Environment Engineering

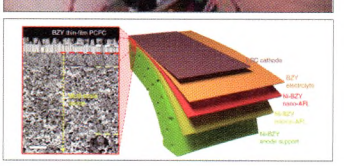
Main Issues

- Effect of Molecular Orientation of Donor Polymers on Charge Generation and Photovoltaic Properties in Bulk Heterojunction All–Polymer Solar Cells (Advanced Energy Materials, 2017)
- Elimination of Microcystin–LR and Residual Mn Species using Permanganate and Powdered Activated Carbon: Oxidation Products and Pathways (Water Research, 2017)
- Insight into Electrochemical CO_2 Reduction on Surface–Molecule–Mediated Ag Nanoparticles (ACS Catalysis, 2017)

Division of Nano & Information Technology

Nano–Information convergence major includes both of Nanomaterials Science and Engineering program and HCI & Robotics program. Nanotechnology has been developed recently and applied for many different fields such as materials science, mechanics, bio–and information technology. In Nanomaterials Science and Engineering program, we introduce the nanotechnology and related application with information technology. In HCI & Robotics program, we introduce the basic technologies in Human Computer Interaction, mechatronic and computer science areas, and covers all aspects of HCI and robotic applications like industrial, service, medical and extremal environments. We aim at providing students with higher education and chances to obtain practical experience by participating in many projects in Nano and Information technology field.





Concentration

- Nanomaterials Science & Engineering
- HCI & Robotics

Main Issues

- Mixed–Dimensional 1D ZnO–2D WSe2 van der Waals Heterojunction Device for Photosensor (Advanced Functional Materials 2017)
- Demonstrating the potential of yttrium–doped barium zirconate electrolyte for high–performance fuel cells (Nature Communications 2017)
- Social Skills Training for Children with Autism Spectrum Disorder Using a Robotic Behavioral Intervention System (AUTISM RESEARCH 2017)

Student Benefits

❶ Full Scholarship

- Tuition and registration costs are covered by KIST.
- The highest level of financial support in Korea is provided to help students focus on their study and research.
- Amount for a Ph.D student _ a minimum of USD 1,500 per month
- Amount for a Master student _ a minimum of USD 1,000 per month
- Amount for an bachelor student _ a minimum of USD 900 per month

❷ Student Welfare

- Diverse academic / cultural events
- Free dinners for researchers working overtime
- Discounted condominium rates at many major tourist destinations in Korea
- First–rate dormitory facilities for 120 USD per month
- Comprehensive insurance

❸ Korean Languange Class

- Support for learning Korean language
- Various on–line and off–line classes are provided for student's adjustment in Korea and for academic life

Alumni Benefits

✪ KIST School Partnership Project

Support for growing the S&T expert in the home country

Providing Co–work opportunity with the outstanding KIST researchers

Utilizing the cutting–edge infrastructure and global network of KIST

KIST has provided the KIST School alumni with the opportunity to participate in the KIST School Partnership Project in order to stay connected, to maintain continuous and close relationship with KIST, and to support their research activities. The selected alumni may request a budget of upto 14,000 USD for a project.

Eligibility

- Should be KIST School alumni members, who are incumbent university faculty members or national/public institute researchers

Period

- Begins from September, the funding term should be 12 months.

Accomplishments

Graduates

· Total 523 (March,2018)
· 28 different countries

Nationality	The Number of Students	Nationality	The Number of Students
Bangladesh	30	Korea	199
Cambodia	1	Malaysia	3
Canada	2	Mongolia	5
China	18	Nepal	8
Costa Rica	3	Nigeria	4
Egypt	13	Pakistan	22
East Timor	1	Philippine	3
Ethiopia	2	Russia	2
France	2	Rwanda	1
Germany	1	Thailand	5
India	36	Ukraine	12
Indonesia	76	USA	4
Iran	2	Vietnam	66
Israel	1	Tunisia	1

Research Performance

Dr. Shahzad Faisal

· '17 Ph.D. graduate (Pakistan)
· Science(2016) 34.661/3.17% (IF/JCR)

Electromagnetic interference shielding with 2D transition metal carbides (MXenes)
Science, Vol 353, Issue 6304, 09 September 2016

Dr.Bo-Eun Yoon

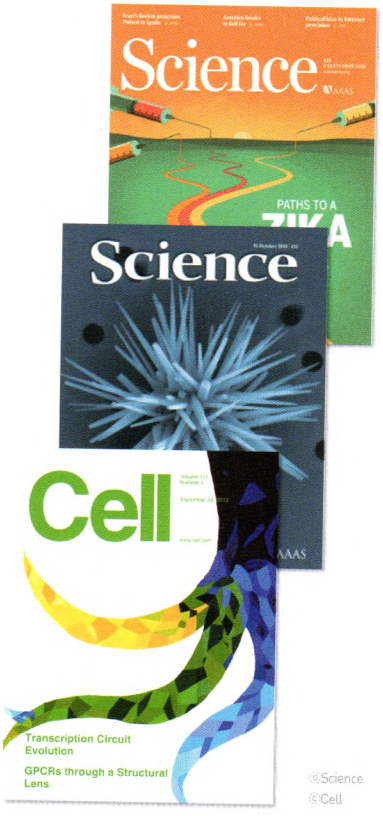
· '12 Ph.D. graduate (Republic of Korea)
· Science (2010) 31.364/3.39% (IF/JCR)

Channel-Mediated Tonic GABA Release from Glia
Science, Vol. 330, Issue. 6005, 15 October 2010

Dr.Dongho Woo

· '12 Ph.D. graduate (Republic of Korea)
· Cell (2012) 32.403/0.55%(IF/JCR)

TREK-1 and Best1 channels mediate fast and slow glutamate release in astrocytes upon GPCR activation
Cell 151, 25-40, 28 September 2012



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The world's 6th most innovative research institute, KIST

1th _ Health & Human Services Laboratories [USA]
2th _ Alternative Energies and Atomic Energy Commission [France]
3th _ Fraunhofer Society [Germany]
4th _ Japan Science & Technology Agency [Japan]
5th _ National Institute of Advanced Industrial Science & Technology [France]
6th _ **Korea Institute of Science & Technology [South Korea]**
7th _ Medical Research Council [UK]
8th _ National Center for Scientific Research [France]
9th _ French Institute of Health & Medical Research [France]
10th _ Agency for Science Technology & Research [Singapore]

HHS tops Reuters' second annual ranking of the Top 25 Global Innovators – Government, a list that identifies and ranks the publicly funded institutions doing the most to advance science and technology. The rankings were compiled in partnership with Clarivate Analytics, formerly the Intellectual Property & Science business of Thomson Reuters, and are based on proprietary data and analysis of indicators including patent filings and research paper citations.

REUTERS

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KIST at 50, Beyond the Miracle

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On February 26, 2016, Science magazine (No. 351), the world's leading scientific journal, published a special article written by Dr. Lee Byeong-kwon, president of KIST. The article was called "Beyond the Miracle of the Past", and it commemorated the 50th anniversary of KIST's founding. It was also a response to a previous Science article titled "Korea's Science Institute: A Model for Developing Nations?", which was published back in 1970 and laid out KIST's miraculous growth during that year as well as its vision for the future.

KIST School
Hwarangro 14-gil 5, Seongbuk-gu, Seoul 02792
Tel 82-2-958-6144 / 02-958-6153 **Fax** 82-2-958-6269
E-mail eunjilee@kist.re.kr / winkmemory@kist.re.kr
Homepage www.kist.re.kr

UST
34113 217 Gajeong-ro, Yuseong-gu, Dajeon, Korea
Tel 82-42-865-5551
Fax 82-42-865-5554
Homepage www.ust.ac.kr