US-Korea Conference
Korean-American Scientists & Engineers Association (KSEA)

UKC 2023 Dallas

Discovery, Innovation and Dissemination for Transformative Impact

August 2-5, 2023
Hyatt Regency DFW
Dallas-Fort Worth, TX, USA
https://www.ukc.ksea.org

Co-Organized with

The Korean Federation of Science and Technology Societies (KOFST)

The Korea-U.S. Science Cooperation Center / National Research Foundation of Korea (KUSCO / NRF)

Korean - American Scientists and Engineers Association (KSEA)

UKC 2023

US - Korea Conference(UKC) 2023

https://www.ukc.ksea.org

Co-Organized with
The Korean Federation of Science and Technology Societies(KOFST) and
The Korea-U.S. Science Cooperation Center
National Research Foundation of Korea (KUSCO / NRF)

Table of Contents

UKC 2023 Organizers

Conference Chair / Co-chair

Yongho Sohn	University of Central Florida	UKC 2023 Chair
Tai Sik Lee	President of KOFST	UKC 2023 Co-Chair

Program, Executive, and Workshops

Chang-Yong Nam	Brookhaven National Lab	Program Chair
Sung Yun Jung	Baylor Medical College	Executive Director
Jayoung Kim	UCLA - CSMC	Executive Director 2
Soyoon Kum	Angelo State University	Financial Director
Juyoung Leem	University of Texas-Dallas	General Director
Taeyul Theo Choi	University of North Texas	Poster Session Chair
Sung-Hee Sonny Kim	University of Georgia	Sponsored Forum Director
Stella RH Kim	Data SC, Inc	Engagement Director
Sua Myong	Johns Hopkins University	SEED Director
Il Minn	Johns Hopkins University	IES Director
TJ (Tae Joong) Park	MIT	FIRE Director
Benjamin Lee	Weill Cornell Medicine	Data Science Workshop Chair

IT and Local Operations

Katie Sang Park	Meta	IT/Web Director
Jongwook Kim	University of Central Florida	IT/Web Assistance
Wooram Park	University of Texas-Dallas	Operation Director 1
In-Hyouk Song	Texas State University	Operation Director 2
Jung Hwan Kim	UT Health Houston	Operation Director 3
Nathan Han	Savills	Operation Director 4

About UKC 2023

You are cordially invited to the US-Korea Conference (UKC) on Science, Technology and Entrepreneurship to be held August 2-5, 2023 at Hyatt Regency DFW (Dallas-Fort Worth area), TX, USA. UKC 2023 is co-hosted by three prestigious organizations: the Korean-American Scientists and Engineers Association (KSEA), the Korean Federation of Science & Technology Societies (KOFST), and the Korea-U.S. Science Cooperation Center / National Research Foundation of Korea (KUSCO / NRF).

The theme of UKC 2023 is "*Discovery, Innovation and Dissemination for Transformative Impact*." UKC 2023 will offer unique opportunities for participants to actively engage in discovery, innovation and dissemination through various symposiums and forums with emphasis on transformative impact on our daily lives, which have been challenged and altered through the pandemic and socio-economic impact of science, technology and entrepreneurship.

US-Korea Conference (UKC)

UKC provides an environment where convergence and innovation can be ignited and implemented. It can play a major role in the Creative Economy that requires interdisciplinary integration.

UKC can play a major role in reducing the technology gap with policy makers, and build the framework to tackle global challenges through science diplomacy.

UKC fosters peer networking and mentoring, and provides a platform for current and future leaders to meet in an environment where meaningful partnerships and friendships can form and grow.

UKC Communicates Science and Technology with the public, and cultivates Science, Technology, Engineering and Math (STEM) education to empower future generations.

https://www.ukc.ksea.org

UKC History

No.	Year	Dates	Venue	KSEA President
1	1974	7/28-8/8	Seoul, Korea	Inyong Ham
2	1976	7/26-8/6	Seoul, Korea	Chong Wha Pyun
3	1978	7/10-13	Seoul, Korea	Sang-il Choi
4	1980	7/14-19	Seoul, Korea	Kwang Bang Woo
5	1982	7/13-21	Seoul, Korea	Kyungsik Kang
6	1991	11/29-12/2	Arlington, VA	Moo Young Han
7	1994	9/22-26	Alexandria, VA	Moon Won Suh
8	1995	8/31-9/4	San Francisco, CA	Dewey Doo-Young Ryu
9	1997	2/21-24	McLean, VA	Saeyoung Ahn
10	1998	4/23-25	Chicago, IL	Kyong Chul Chun
11	1998	10/22-24	Vienna, VA	Ki Dong Lee
12	1999	8/12-14	Los Angeles, CA	Hong Taik (Thomas) Hahn
13	2000	9/2-5	Chicago, IL	Howard Ho Chung
14	2001	8/10-12	Cambridge, MA	Nak Ho Sung
15	2002	7/8-11	Seoul, Korea	Chan Il Chung
16	2003	8/7-9	Caltech, CA	Quiesup Kim
17	2004	8/12-14	RTP, NC	Sung Won Lee
18	2005	8/11-13	Irvine, CA	Kwang-Hae (Kane) Kim
19	2006	8/10-13	Teaneck, NJ	Sung K. Kang
20	2007	8/9-12	Reston, VA	Kang-Won Wayne Lee
21	2008	8/14-17	San Diego, CA	Kang-Wook Lee
22	2009	7/16-19	Raleigh, NC	Chueng-Ryong Ji
23	2010	8/11-15	Seattle, WA	Jae Hoon Kim
24	2011	8/10-14	Park City, UT	Hosin David Lee
25	2012	8/8-11	Los Angeles, CA	Hyungmin Michael Chung
26	2013	8/7-10	New York, NY	Myung Jong Lee
27	2014	8/6-9	San Francisco, CA	Kookjoon Ahn
28	2015	7/29-8/1	Atlanta, GA	Youngsoo Richard Kim
29	2016	8/10-13	Dallas, TX	Jaehoon Yu
30	2017	8/9-12	Washington, DC	Eun-Suk Seo
31	2018	8/1-4	New York, NY	K. Stephen Suh
32	2019	8/14-17	Chicago, IL	Jun-Seok Oh
33	2020	12/14-17	Virtual	Soolyeon Cho
34	2021	12/15-18	Los Angeles, CA	Byungkyu Brian Park
35	2022	8/17-20	Washington D.C.	Young-Kee Kim

* Note the moratorium practiced in the 4th meeting, 1980.

Welcoming Remarks from UKC 2023 Chair

Yongho Sohn Ph.D.

UKC 2023 Chair & President of KSEA (Korean-American Scientist and Engineers Association)

UCF Pegasus Professor & Lockheed Martin Professor of Engineering

Department of Materials Science and Engineering
University of Central Florida

Welcome to the 36th US-Korea Conference on Science, Technology, and Entrepreneurship (UKC 2023), jointly organized by the Korean-American Scientists and Engineers Association (KSEA), the Korean Federation of Science and Technology Societies (KOFST) and the Korea-US Science Cooperation Center (KUSCO) / National Research Foundation (NRF). As the Conference Chair, I am thrilled to host this extraordinary event where visionaries, innovators, and leaders from the United States and Korea gather to foster collaboration, exchange knowledge, and shape the future of our interconnected worlds. We embark on a journey that celebrates the spirit of collaboration, pushing the boundaries of knowledge and unleashing the power of innovation to create a transformative impact on our world.

Over the years, UKC has evolved into an iconic platform that celebrates the synergistic relationship between the United States and Korea, two nations renowned for their scientific advancements, technological breakthroughs, and entrepreneurial spirit. In Dallas, Texas, we gather to "*discover, innovate, and disseminate for transformative impact*" by converging brilliance and expertise of all invited and contributing participants who are at the forefront of scientific breakthroughs, technological advancements, entrepreneurial endeavors, and policy innovations. UKC 2023 offers unparalleled, cross-disciplinary platform of science, technology and entrepreneurship for participants to actively engage in various plenary sessions, keynote symposia, technical symposia, professional development workshops, and focused forums offered by conference sponsors and organizers.

The spirit of discovery drives our progress and plays pivotal role of the relentless pursuit of knowledge, the exploration of uncharted territories, and the curiosity that fuels our souls that cornerstones advancements. At the heart of our endeavors lies engineering and technological innovation that fuse creativity, expertise, and the courage to challenge conventions by driving transformative change that solve complex problems for the benefit of our lives. Dissemination by effective communication, collaboration, and the sharing of knowledge accelerates and amplifies our impact, while inspiring others to join our mission. Together, we will explore new frontiers, forge meaningful partnerships, and shape a future that is both prosperous and sustainable.

I extend my sincere gratitude to our co-organizers, sponsors, the organizing team members, and volunteers for their tireless efforts in making this conference a resounding success. Your unwavering support has enabled us to curate a program that promises to fulfill the vision and mission of UKC 2023.

I invite you to immerse yourself in the vibrant atmosphere of UKC 2023. Engage in stimulating conversations, form lasting connections, and embrace the spirit of collaboration that lies at the heart of this conference. Let us harness the power of discovery, innovation, and dissemination to create a transformative impact that will shape our world for generations to come.

Welcome to UKC 2023!

Yongho Sohn
UKC 2023 Chair and President of KSEA

Welcoming Remarks from UKC 2023 Co-Chair

Tai Sik Lee

UKC 2023 Co-Chair &
President of KOFST
(Korean Federation of
Science and Technology
Societies)

It is truly an honor and pleasure to welcome all the scientists and engineers from home and abroad, who are joining us at the US-Korea Conference 2023 on Science, Technology, and Entrepreneurship (UKC-2023), bringing with them a passion as intense as the scorching summer in Texas.

As we commemorate the 70th anniversary of the ROK-U.S. alliance and the 120th anniversary of Korean immigration to the United States this year, I find it deeply meaningful that we are here to host the 36th UKC in Texas, which is emerging as a new hub for Korea-U.S. technological alliance. In order to survive in the accelerating race for technological hegemony, the world is putting forth every effort to secure competitiveness in science and technology. Consequently, the collaboration through international cooperation in science and technology has become more important than ever. Technology cooperation is being bolstered by technology alliance, and cooperative competition is taking place alongside technology competition.

Now, Korea and the U.S. are moving beyond a security alliance towards an advanced technology alliance. In line with this, I hope that Korean-American scientists and engineers can serve as a bridge of innovation which connects the two countries, and that the UKC will be further upgraded as a platform for joint research and collaboration in science and technology. The theme for this year's UKC is "*Discovery, Innovation and Dissemination for Transformative Impact*". I believe that the theme holds profound importance to the Korean economy, which is grappling with challenges after a phase of prosperity driven by the fast-follower model. Indeed, the essence and mission of science and technology is to spread innovation to the entire society through constant exploration and discovery. Nevertheless, we find ourselves in the midst of crisis as we turn away from challenges and innovation in a social atmosphere that feeds a fear of failure. Strangely enough, the science and technology community, which is unwilling to embrace uncertainty and risk, boasts an astonishing 100% success rate in national research and development.

However, a research that is predestined for success offers little promise for the future. We must boldly transition to become first movers who fearlessly venture into uncharted territories, utilizing numerous failures as stepping stones. The global triumph of K-pop and K-contents, exemplified by BTS and Squid Game, provides a clear indication of the path that K-science should strive towards.

I, myself, have dedicated significant time and effort to space construction, an area that initially garnered interest only from NASA. During my tenure as the President of the Korea Institute of Civil Engineering and Building Technology, we achieved a significant milestone by creating the largest lunar exploration technology and equipment test chamber (dusty thermal vacuum chamber), which was yet to be developed by NASA. It is worth noting that, only recently, other space power countries have commenced their research efforts in space construction. On the other hand, we have produced world-class research outcomes in this field as we took on the challenge as a first mover.

I hope that this year's UKC serves as a valuable opportunity for scientists and engineers to reflect on their mission, which is to fearlessly pioneer new territories, undaunted by the prospect of failure.

Lastly, I would like to express my deepest gratitude to the dedicated staff of the Korean-American Scientists and Engineers Association (KSEA), including President Yongho Sohn, for their tireless efforts in organizing this remarkable event. I hope that this conference will provide a meaningful venue to engage in intense discussions and share insightful ideas. Once again, I would like to extend a warm welcome to all of you who are with us today, and wish you all the best in your future endeavors.

Thank you.

Tai Sik Lee
President of the Korean Federation of Science and Technology Societies

Welcoming Remarks from KUSCO/NRF President

Kwang Bok Lee

President of Korea-U.S. Science Cooperation Center

President of National Research Foundation of Korea

Dear Esteemed Guests, Ladies and Gentlemen,

It is my great honor to welcome you to the US-Korea Conference 2023. I would like to express my sincere appreciation to all the participants who have joined us for this year's Conference. I am truly grateful to the speakers, policymakers, and leaders of the academic and research communities for enhancing the significance of this event with their presence.

Furthermore, I extend my heartfelt gratitude to the Korean-American Scientists and Engineers Association and the Korean Federation of Science and Technology Societies, particularly President Yongho Sohn and President Taesik Lee, respectively, for their unwavering efforts in organizing this conference.

In today's world, international cooperation in science and technology plays a crucial role in addressing global challenges, driving innovation, and promoting sustainable development. By leveraging the strengths of different nations, sharing knowledge, and fostering collaboration, we can effectively tackle complex problems, accelerate scientific progress, and build a better future for the world.

This year we celebrate the 70th anniversary of the ROK-U.S. alliance. This partnership becomes even more critical in the face of a rapidly changing global landscape and intensifying technological competition. Recent State Visits and the Joint Committee Meeting on Science and Technology have further strengthened this collaboration. In this context, the role of Korean researchers in the United States holds utmost significance in promoting collaboration in science and technology.

The theme of UKC 2023 is "*Discovery, Innovation, and Dissemination for Transformative Impact.*" In a world characterized by escalating competition and confrontation, we encounter various challenges and opportunities. In this era of transformation, it becomes imperative to seek innovative solutions that can profoundly impact our society and economy. Throughout this conference, we will explore the vital role of science, technology, and entrepreneurship in driving innovation and creating a transformative impact on our society.

I am truly confident that this conference will not only provide a platform for in-depth discussions and give us direction in this transformative era, but also offer an opportunity to strengthen the partnership between the two countries in the fields of science and technology. I hope that this event will offer you valuable insights and pave the way for fruitful collaborations.

Thank you once again for your participation in UKC 2023.

August 2023
Lee, Kwang Bok

President, Korea-U.S. Science Cooperation Center
President, National Research Foundation of Korea

Welcoming Remarks from UKC 2023 Program Chair

Chang-Yong Nam

Scientist
Brookhaven National Laboratory

Greetings to all participants of the 36th US-Korea Conference on Science, Technology, and Entrepreneurship (UKC 2023).

As the annual flagship event of the Korean-American Scientists and Engineers Association (KSEA), UKC 2023 stands as a testament to the collaborative ties between the United States and Korea—two nations recognized for their contributions to scientific excellence, technological innovation, and enterprising spirit.

As the Program Chair, it is my great pleasure to extend a warm welcome to this distinguished gathering. At this event, esteemed experts, entrepreneurs, and policymakers from the United States and Korea come together to foster partnerships, exchange insights, and collectively shape the path of our interconnected world.

Set against the backdrop of the vibrant city of Dallas-Fort Worth, Texas, UKC 2023 centers around the theme, "*Discovery, Innovation, and Dissemination for Transformative Impact*", which aptly reflects the expertise of our invited participants and contributors, who are leaders in scientific advancements, technological progress, entrepreneurship, and policy innovation.

UKC 2023 presents a comprehensive program, featuring Plenary sessions, 4 Keynote Symposiums, and 14 Technical Group Symposiums. Additionally, it includes a dynamic Poster Session featuring nearly 130 poster presentations. Complemented by 9 Distinguished Forums, 8 Sponsor Forums, the Fostering Innovation in Rising Experts (FIRE) Symposium, the Innovation & Entrepreneurship Symposium (IES), the Data Science Workshop (DSW), and the Early Career Development (SEED) Workshop, this array captures the rich and diverse experience we aim to provide.

Lastly, I extend my heartfelt gratitude to our co-organizers, the dedicated members of the organizing team, the KSEA staff, and the volunteers. Their steadfast commitment has played a pivotal role in ensuring the success of UKC 2023.

With warm regards,
Chang-Yong Nam
UKC 2023 Program Chair

Congratulatory Message

Greg Abbott

United States
Governor for Texas

STATE OF TEXAS
OFFICE OF THE GOVERNOR

Greetings:

As Governor of Texas, it is my honor to welcome all attendees to the United States–Korea Conference on Science, Technology, and Entrepreneurship in Dallas.

We live in a state that is populated by people of all races, nationalities, and backgrounds. Such diversity lends itself to a greater marketplace of ideas, and one organization that fosters international cooperation and shared knowledge is the Korean-American Scientists and Engineers Association.

The Korean-American Scientists and Engineers Association has promoted science and technology to benefit the United States and Korea for more than fifty years. Members of seventy local chapters throughout the United States support a strong professional foundation across all fields of science and engineering.

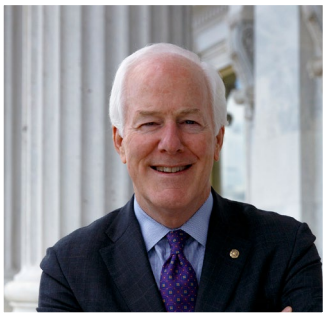
Your contributions mold our culture, increase our capabilities, and strengthen our economy. I applaud the Korean-American Scientists and Engineers Association for its promotion of continuing education and professional development, and I commend its efforts to expand educational opportunities through scholarships and grants.

First Lady Cecilia Abbott joins me in wishing you all a productive, rewarding event.

Sincerely,

Greg Abbott
Governor

Congratulatory Message



John Cornyn

United States
Senator for Texas

United States Senate
WASHINGTON, DC 20510–4305

August 3, 2023

2023 US-Korea Conference on Science, Technology and Entrepreneurship

Dear Friends:

I would like to send a warm Texas greeting as you gather in Dallas for the 36th US-Korea Conference on Science, Technology and Entrepreneurship. These are important topics that impact our daily lives, and I commend you for your leadership in these fields.

This year also signifies the 70th anniversary of the Mutual Defense Treaty signed by the United States and the Republic of Korea. This alliance facilitates cooperation across a number of disciplines, including science, technology and commerce. The result has been innovative advancements not only within our two nations but throughout the world.

The Korean-American Scientists and Engineers Association, joined by the Korean Federation of Science and Technology Societies and the Korea-US Science Cooperation Center, promote these accomplishments and the importance of our alliance. I encourage you to continue pursuing excellence in the years to come.

Sincerely,

JOHN CORNYN
United States Senator

Congratulatory Message

Andy Kim

Congressman
Third Congressional District
of New Jersey

CONGRESSMAN ANDY KIM
UNITED STATES HOUSE OF REPRESENTATIVES
NEW JERSEY THIRD CONGRESSIONAL DISTRICT

Dear UKC 2023 participants,

I want to say thank you for bringing this group together and continuing to think about how there can be strong partnerships, when it comes to science, engineering, and other types of critically important industries, especially between the United States and Korea.

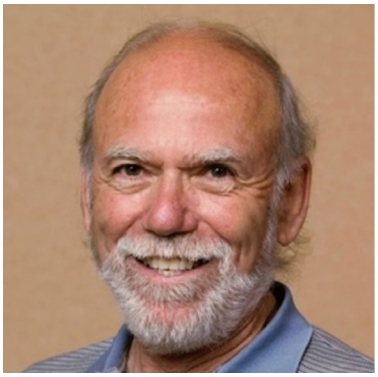
A lot of you are at the cutting edge, the leading edge, of your fields and it's exciting to see all this transformation that's happening around the world. It really feels like we're on the front-end of an incredibly new and dynamic era of technological innovation that's going to propel our world forward. It is going to be so important that the United States and Korea are leading the pack and that they are the ones driving so much of this innovation. It's something that will strengthen our strategic partnership between these nations as well as help make sure we can shape this next global era in a way that is beneficial, peaceful, and in a way that will try to maximize the support and the help that we can provide to our people. This is something that I am excited about.

All of you are doing so much important work. I'm looking forward to how I can be supportive from Congress, in terms of increasing this type of partnership and this kind of investment in innovation and science. I'm looking forward to hearing from all of you about what you take out from this time together. Thank you again for gathering and please stay in touch. I look forward to what comes next from all of you. Thank you!

Sincerely,

Andy Kim
Member of Congress

Plenary Speakers



Barry C. Barish

Nobel Laureate

Professor of Physics
Emeritus at Caltech,
President's Distinguished
Endowed Chair at
Stony Brook University

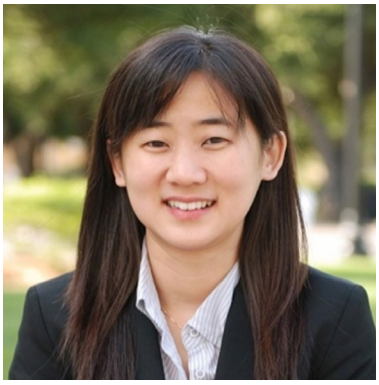
8am _ Thursday _ August 3 _ Enterprise Ballroom 1-4

Barry Barish is Linde Professor of Physics, emeritus, at Caltech and Distinguished Professor of Physics at UC Riverside. He is a founder of the Laser Interferometer Gravitational-wave Observatory (LIGO), which discovered gravitational waves from the collision of two black holes in September 2015. LIGO, using suspended mass interferometric techniques, measures tiny distortions in spacetime from the passage of a gravitational wave. The experiment continues to open new frontiers with the recent observation of the collision of two neutron stars that initiated an exciting new area of multimessenger astronomy. Barish also led the design of the International Linear Collider, a global collaboration that designed the proposed next generation particle accelerator that will pursue the understanding of the Higgs Boson. He has been the recipient of numerous awards and prizes, culminating in sharing, with Rainer Weiss and Kip Thorne, the 2017 Nobel Prize in Physics for "*for decisive contributions to the LIGO detector and the observation of gravitational waves*". Starting the fall of 2023, he will serve as the inaugural President's Distinguished Endowed Chair in Physics at Stony Brook University.

Understanding our Universe with Gravitational Waves

The discovery of gravitational waves, predicted by Einstein in 1916, is enabling both important tests for the theory of general relativity, and the birth of a new astronomy. Modern astronomy, exploring all types of electromagnetic radiation, is giving us an amazing understanding of the complexities of the universe, and how it has evolved. Now, gravitational waves and neutrinos are beginning to give us the opportunity to pursue some of the same astrophysical phenomena in very different ways, as well as to observe phenomena that cannot be studied with electromagnetic radiation. The detection of gravitational waves and the emergence and prospects for this exciting new science will be explored.

Plenary Speakers



Jin Hyung Lee

Associate Professor of Neurology and Neurological Sciences, Bioengineering, Neurosurgery, and (by Courtesy) Electrical Engineering
Stanford University

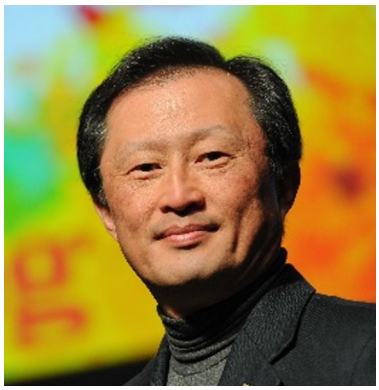
8am _ Friday _ August 4 _ Enterprise Ballroom 1-4

Jin Hyung Lee is an Associate Professor of Neurology and Neurological Sciences, Bioengineering, Neurosurgery, and Electrical Engineering (Courtesy) at Stanford University and the founder of LVIS. Dr. Lee received her Bachelor's degree from Seoul National University and Masters and Doctoral degree from Stanford University, all in Electrical Engineering. She is a recipient of the 2008 NIH/NIBIB K99/R00 Pathway to Independence Award, 2010 NIH Director's New Innovator Award, 2010 Okawa Foundation Research Grant Award, 2011 NSF CAREER Award, 2012 Alfred P. Sloan Research Fellowship, 2012 Epilepsy Therapy Project award, 2013 Alzheimer's Association New Investigator Award, 2014 IEEE EMBS BRAIN young investigator award, 2017 NIH/NIMH BRAIN grant award, and 2018 Lina 50+ Award Grand Prize, and 2019 NIH Director's Pioneer Award. As an Electrical Engineer by training with Neuroscience research interest, her goal is to analyze, debug, and engineer the brain circuit through innovative technology.

Creating a "*Digital Twin*" of the Brain

Brain disorders are dramatically increasing in prevalence with no cure to date. My research goal was to address this problem by creating a "*digital twin*" of the brain. A digital twin that can help address brain disorders would need to have three main features. First, it should replicate brain function that can be directly measured from the brain. Second, it should explain the mechanisms underlying the measured brain function. Third, it should be able to predict outcome of interventions that have not been tested yet. Through the past 15 years of research, we are now starting to create digital twins of the brain that achieve all three goals. With the ability to create such digital twins for individuals, we can imagine a future where diagnosis of each patient can be accurately done through inspection of the individual's digital twin, treatment can be selected based on the understanding of the mechanisms underlying the digital twin's dysfunction, and new therapies designed through simulations performed on the digital twin of the brain. In this talk, I will share our achievements to date and vision for the future of brain healthcare.

Plenary Speakers



Youngsuk "YS" Chi

Chairman of Elsevier
Director of Corporate Affairs, RELX

10:30am _ Saturday _ August 5 _ Enterprise Ballroom 1-4

Youngsuk 'YS' Chi is an international businessman and a global thought leader in the publishing, education and information solutions industries. As Chairman of Elsevier, the world's leading scientific, technical, and medical information and analytics company, he works directly with key stakeholders in government, academia, and industry to support over 30 million scientists, students, and health information professionals around the world. In his role as Director of Corporate Affairs for RELX, Elsevier's parent company, he is responsible globally for government affairs, corporate communications, and corporate responsibility across all four of the group's market segments: STM, Risk & Business Analytics, Legal, and Exhibitions. Based in London and Washington D.C., Chi travels extensively to engage with scientific and medical research communities, deliver thought leadership on key trends and advise stakeholders, boards, and groups across industries. Chi serves as Distinguished Visiting Professor at Korea Advanced Institute of Science and Technology (KAIST), as well as an independent director of Ingram Industries Inc. (Nashville, USA) and CFI Education (Vancouver, Canada). Chi is actively involved in numerous educational, artistic, and charitable organizations, including Princeton University, Educational Testing Service ETS (Princeton, NJ), Korea-US Science Center KUSCO, and the Ban Ki-Moon Foundation. Chi has also served terms as the Chair and Immediate Past Chair of the Association of American Publishers, as well as the President and Past President of the International Publishers Association. Chi is a graduate of Princeton University, Columbia University Graduate School of Business, and was awarded a PhD (Hon) in Literature from Sejong University and a PhD (Hon) from the University of Surrey.

Navigating Careers in Science, Engineering, and Entrepreneurship in an Ever-Changing World

Mr. Chi will reflect on current realities of the global business and academic ecosystem and how they relate to career development for young scientists and professionals worldwide. Mr. Chi will consider questions around the chief issues faced in today's education, academic, and research landscapes, and how to best prepare for success in this ever-changing environment. He will offer insights from his experience as a leading Korean-American businessman, publishing executive, and mentor to hundreds of young people around the world.

Jae Hoon Kim

Senior Technical Fellow, Boeing Research & Technology

Outstanding Contribution to KSEA Award

Dr. Jae Hoon Kim is an Executive and Senior Technical Fellow of Boeing Research & Technology (BR&T). During 32-year tenure at Boeing, Dr. Kim has served as PI and PM for a number of U.S. Department of Defense (DoD) programs for OSD(R&E), DARPA, Army DEVCOM C5ISR, Air Force AFRL, Navy ONR as well as Boeing internal R&D projects. Dr. Kim has also served as an Affiliate Professor of Electrical and Computer Engineering Dept. at University of Washington since 2000. Prior to joining Boeing High Tech Center in 1991, Dr. Kim was a Senior Research Scientist and Project Manager at Caltech / NASA Jet Propulsion Laboratory (1987-1991).

Dr. Kim is a nationally recognized expert and technical leader in wireless communications and mobile networking throughout the Industry and DoD Scientific Community. His unique experience in a wide range of communications systems during his 36-year career has resulted in an unusually broad and comprehensive technical expertise in Space Microelectronics, Optoelectronics, Fiber Optics, RF/Optic, Satellite, Wireless Communications and Networks, particularly on the military Tactical Mobile Ad-hoc Networks (MANET). Dr. Kim is an author/co-author of 100+ publications, has received 8 U.S. Patents and 2 International Patents (EU, UK, Germany, France, Japan, China), 25+ Boeing Technology Outstanding Performance Awards, 10 NASA Technology Innovation Awards, and 20+ DoD Research Project Contract Awards. Dr. Kim edited two books; "*Green IT: Technologies and Applications*" (Springer 2011), "*UAV Networks and Communications*" (Cambridge University Press 2018) and its Chinese translation (China Machine Press 2019). He has served as an IEEE Editor for the Communications Letters (Monthly Technical Journal) for a decade since 2001.

He had also served various Technical Conferences and Workshops as reviewer, organizers including Technical Program Chair of IEEE MILCOM 2011 (Baltimore, MD). Dr. Kim received his B.S. and M.S. from Seoul National University, Korea, and Ph.D. from University of Florida, Gainesville, FL, all from Electrical and Computer Engineering. Dr. Kim is an IEEE Life Senior Member (2017). Dr. Kim has served as the 39th President of KSEA, the 9th Chairman for Washington State Education and Culture Foundation (WSECF) and United Seattle-Bellevue Korean School (USBKS) Board of Directors. His lifetime achievements and contributions have been recognized through several awards, including The Republic of Korea Presidential Award (2008 대한민국 대통령 표창) and The Order of Civil Merits-Peony Medal (2018 대한민국 국민훈장 모란장).

2023 KSEA Awards

Jiwoong Park

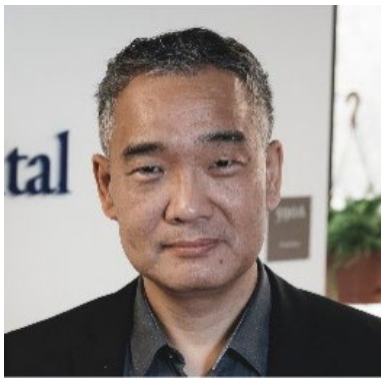
Professor
Department of Chemistry
University of Chicago

Scientist of the Year Award

Dr. Jiwoong Park is a Professor (since '16) of the Department of Chemistry, Prizker School of Molecular Engineering, University of Chicago. He received his B.S. in Physics ('93) from Seoul National University and earned his Ph.D. in Physics, University of California at Berkeley ('03). Before joining the University of Chicago, he served as an Assistant and Associate Professor at the Cornell University ('06-'16).

Prof. Park research focuses on the development of wafer-scale atomically thin materials and their engineered van der Waals heterostructures. Over the past decades, Dr. Park has remained one of the most creative and influential researcher and developed transdisciplinary approaches that are scalable, precise, and innovative. He has demonstrated the development of 2D van der Waals crystals and molecular structures into real, large-scale materials thar have potential for use in future electronic, thermal, energy, and quantum applications.

Prof. Park is a highly productive and well-recognized researcher and educator. He published over 101 journal papers including 9 Nature and 7 Science articles and received 7 patents. He was elected as an American Physical Society Fellow ('22) and received NSF Career award, NSF Presidential Early Career Award for Scientists and Engineers (PECASE), and Alfred P. Sloan Research Fellowship. He has received more than $16 million in research funds from various funding agencies such as DOE, NSF, and AFOSR.



Jaehong Kim

Henry P. Becton Sr. Professor of Engineering

Department of Chemical and Environmental Engineering
Yale University

Engineer of the Year award

Dr. Jaehong Kim is Henry P. Becton Sr. Professor of Engineering at Yale University. He previously served as the chair of the Department of Chemical and Environmental Engineering at Yale from 2016 to 2022. He received his B.S. and M.S. degrees in Chemical & Biological Engineering from Seoul National University in 1995 and 1997, respectively. He earned his Ph.D. in Environmental Engineering from the University of Illinois at Urbana-Champaign in 2002. Prior to joining Yale, he was a professor in School of Civil and Environmental Engineering at Georgia Tech (2002-2013).

Prof. Kim is a pioneer of several highly innovative research subjects that contributed to opening new research areas within the field of water treatment. His research primarily focuses on developing next-generation technologies to remove or inactivate pathogens and degrade harmful organic pollutants through photo/electro-catalytic advanced oxidation and photochemical/photothermal solar water disinfection, employing advanced materials such as nanomaterials and single-atom catalysts.

He is a distinguished leader in environmental nanotechnology who demonstrates inclusive leadership. He is a recipient of various awards for both teaching and research, including Ackerman Award for Teaching and Mentoring from Yale University (2017), Bill Shultz Junior Faculty Teaching Award from School of Civil and Environmental Engineering (2013), Walter J. Weber, Jr. Frontier in Research Award from Association of Environmental Engineering and Science Professors (2023), Walter L. Huber Civil Engineering Research Prize from American Society of Civil Engineers (2013), and Paul L. Busch Award from Water Environment Research Foundation (2009). He received Best Paper Award from American Chemical Society three times (2012, 2018, 2020), and most recently in 2022, was recognized as Clarivate Web of Science Highly Cited Researcher.

Kevin Kim

CEO
Brave Turtles, Inc.

Entrepreneur of the Year Award

Mr. Kim is the current CEO of the Brave Turtles, Inc. (established in 2015) since 2021 and the President of SoCal K-Group in Los Angeles since 2018. He received his BA in Digital Media Fine Arts at OTIS, Los Angeles, CA. Mr. Kim started his career as a visual artist, and now flourishes his artistic career into a metaverse platform of business. After he joined as CEO in 2021, Brave Turtles launched RUNWAY Z in the metaverse platform with 60 million user visits within 6 months. Under his visionary leadership since then, the company has expanded its market value of more than $14M evaluation with a rapid growth in a metaverse platform.

Prior to his joining at Brave Turtles, he has experienced 19 years in the visual art entertainment business. Notably, he was one of Visual Effects (VFX) Oscar winning team in 2012 for Hugo and 2012 VFX Emmy winning team of Game of Thrones Season 2, while he worked at Pixomondo from 2011 to 2013. His team was nominated for 2013 VFX Oscar for Star Trek into Darkness, which involved 18 game cinematics such as Dragon age and the Force Unleashed 2.

Mr. Kim is an accomplished entrepreneur with a strong technical background in visual effects and gaming industry. He has also been involved in various community and cultural activities for Korean Americans.

재단법인 씨젠의료재단
Seegene Medical Foundation

Distinguished Sponsor Membership (DSpM)

Seegene Medical Foundation (SMF) is a large independent reference laboratory in South Korea. The testing center headquarters is located in Seoul, and there are four regional centers. SMF provides over 4,500 testing services, including routine laboratory tests, molecular tests, pathological diagnosis, and clinical research, to clinics and hospitals nationwide. SMF performs approximately 400,000 tests daily.

SMF operates the largest molecular diagnostic test center in South Korea. Its systems are capable of performing 400,000 automated COVID-19 tests per day. SMF has tested over 63 million people for COVID-19 since 2020, making it the largest testing center in Korea. SMF played a pivotal role in Korea's successful quarantine program.

SMF is exploring diagnostic values through several research institutes, including the Immune Research Institute, the R&D Center for Clinical Mass Spectrometry, the Molecular Diagnostic Research Center and AI Research Center. SMF has a grand vision to be the leader in digital healthcare by leveraging big diagnostic data populated from its in vitro diagnostics services.

SMF is promoting overseas expansion specifically in the United States, Europe, Southeast Asia, and Central Asia. In particular, SMF plans to diagnose and prevent diseases through IT-based digital healthcare services, and even provide treatment services.

The Seegene Medical Foundation contributes to human health and welfare through accurate diagnostic testing, social contribution and innovative research.

2023 KSEA Young Investigator Grant

Changrim Lee

Postdoctoral Research Fellow
Department of Ophthalmology at Harvard Medical School
Schepens Eye Research Institute of Massachusetts Eye and Ear Infirmary

2023 KSEA YIG Award in Science

Dr. Changrim Lee is a postdoctoral research fellow in the department of Ophthalmology at Harvard Medical School and Schepens Eye Research Institute of Massachusetts Eye and Ear Infirmary. He received his B.S. in Chemistry and M.S. in Biochemistry from Yonsei University in 2011 and 2014, respectively, and earned his Ph.D. in Pharmacology and Pharmaceutical Sciences from the University of Southern California in 2020, under the supervision of Professors Andrew MacKay and Sarah Hamm-Alvarez.

Dr. Lee's research interest lies at the interface of molecular/cellular biology, protein chemistry, polymer biophysics, and drug delivery technologies. His Ph.D. work focused on fundamental aspects of nanoparticle-mediated delivery of small and macromolecules and their pharmacology in vitro and in vivo.

He currently focuses on the biology of conjunctival epithelium and ocular surface health, and studies conjunctival biology and ocular surface pathophysiology in epigenomics, intracellular, extracellular, and pharmacology aspects.

Dr. Lee is the recipient of NIH T32 Kirschstein Institutional National Research Service Award from 2022 through 2023 and was awarded University of Southern California Provost Fellowship from 2014 through 2016. He received several awards including Hanmi-KASBP Fellowship Award of Korean American Society in Biotech and Pharmaceuticals and Outstanding Predoctoral Research Award of Association of Korean Neuroscientists, both in 2022. So far, he has published 8 journal papers in prestigious journals, 6 papers among which he is the first author for. His publications have received over 89 citations with an h-index of 6.

With the KSEA Young Investigator Grant, Dr. Lee will investigate "*Sex difference in the profile of extracellular bioactive lipids of conjunctival epithelial cells during allergic inflammation*" and the successful execution of this proposal will provide new insights into the bioactive lipid-mediated ocular surface protective mechanism generated by the conjunctiva and the basis for a tailored sex-dependent, lipid-based therapeutic approach in the management of vision-debilitating ocular surface diseases.

2023 KSEA Young Investigator Grant

Hyoyoung Jeong

Assistant Professor
Department of
Electrical and Computer Engineering
University of California, Davis
Affiliated Faculty at the Center for
Neuroengineering & Medicine

2023 KSEA YIG Award in Engineering

Dr. Hyoyoung Jeong is an assistant professor in the department of electrical and computer engineering at the University of California, Davis, and affiliated faculty at the Center for Neuroengineering & Medicine. He received his B.S. in Biomedical Engineering from Yonsei University in 2008 and M.S. in Bioengineering from Seoul National University in 2010. He completed his Ph.D. at the University of Texas at Austin department of Electrical and Computer Engineering (UT ECE), supervised by Prof. Nanshu Lu, where he developed a wireless stretchable electronic tattoo (e-tattoo) and unconventional freeform manufacturing schemes for flexible thin film wearable devices.

Before joining UT ECE for his Ph.D., he worked for Samsung Advanced Institute of Technology for 5 years as a researcher and developer in the advanced smartphone hardware group and mobile healthcare group. His work as a postdoctoral scholar with Professor John Rogers focused on the development and characterization of wireless soft wearable platforms for measuring and analyzing multimodal clinical-grade bio potentials. Currently, he focuses on personalized closed-loop wearable bio-electronics for health monitoring, diagnostics, and therapeutics.

Dr. Jeong received several awards, including the Engineering PhD Summit Award from École polytechnique fédérale de Lausanne (EPFL), Switzerland. He was the recipient of the 15th and 24th Samsung Humantech Paper Awards from Samsung Electronics Co. So far, he has published more than 30 journal papers in prestigious journals, including Science and multiple Science Advances and PNAS, as a leading author. His publications have received over 1800 citations with an h-index of 21. He has received 17 patents (8 pending) and has been invited to give more than 30 talks related to his research area.

With the KSEA Young Investigator Grant, Dr. Jeong will investigate "*Skin-interfaced wireless device for intrapartum fetal and maternal monitoring to minimize unnecessary C-section*," with an aim to research and develop the technology for an integrated monitoring platform leveraging advanced flexible electronics, wireless connectivity, and compatibility with a wide range of low-cost mobile devices. His research will contribute to solving a health problem that touches virtually every family and can potentially make an impact on both outcomes and cost of childbirth.

Program at a Glance

<table>
<tr><th>8/1/2023 (Tue)</th><th>8/2/2023 (Wed)</th><th>8/3/2023 (Thu)</th><th>8/4/2023 (Fri)</th><th>8/5/2023 (Sat)</th></tr>
<tr><td colspan="5">Breakfast (7:00 - 8:00 am)</td></tr>
<tr><td rowspan="2"></td><td rowspan="5">SEED</td><td>Opening / Plenary Session
(8:00 - 10:00 am)</td><td>Plenary Session
(8:00 - 10:00 am)</td><td>KSEA Forums, TG Symposiums, IES, FIRE
(8:00 - 10:00 am)</td></tr>
<tr><td colspan="3">Break (10:00 - 10:30 am)</td></tr>
<tr><td rowspan="4">SEED</td><td>Keynote Symposiums
(10:30 - 12:30 pm)</td><td>Keynote Symposiums
(10:30 - 12:30 pm)</td><td>Closing / Plenary Session
(10:30 - 12:30 pm)</td></tr>
<tr><td colspan="3">Lunch (12:30 - 1:30 pm)</td></tr>
<tr><td>Distinguished Forums
(1:30 - 3:30 pm)</td><td>Sponsor Forums
(1:30 - 3:30 pm)</td><td>DSW</td></tr>
<tr><td colspan="3">Break (3:30 - 4:00 pm)</td></tr>
<tr><td rowspan="3">Sponsor Welcome Reception and Banquet (5 pm)

UKC Reception (8 pm)</td><td>TG Symposiums, IES, FIRE, Forum
(4:00 - 6:00 pm)</td><td>TG Symposiums, IES, and FIRE
(4:00 - 6:00 pm)</td><td>DSW</td></tr>
<tr><td>Break
(6:00 - 7:00 pm)</td><td>UKC Poster Session
(6:00 - 9:00 pm)</td><td>Break
(6:00 - 7:00 pm)</td></tr>
<tr><td>UKC Banquet</td><td>Networking Dinner & Poster Session (Continued)</td><td></td></tr>
</table>

Room Information

August 3 _ Thursday _ 2023							
Room/Time	7-8:00 am	8-10:00	10:30-12:30pm	12:30-1:30pm	1:30-3:30pm	4-6:00pm	7-9:00pm
Aviator A	Breakfast			Lunch			
Aviator B							
Foyer	Booth						
Enterprise Ballroom 1		Plenary : Opening	Keynote Symposium (PSE)		CHEY Forum		UKC Banquet
Enterprise Ballroom 2							
Enterprise Ballroom 3							
Enterprise Ballroom 4							
Enterprise Ballroom 5			Keynote Symposium (LSE)				
Enterprise Ballroom 6							
Enterprise Ballroom 7			Keynote Symposium (CSE)			IES	
Enterprise Ballroom 8							
Maverick			Keynote Symposium (WEC)			TGS / B3&C1-BME	
Developers				KWiSE Forum		R&D Leaders Forum	Former P Meeting
Carter					K-Water Forum	TGS / A1-PHY	
Hobby					KHNP Forum	TGS / A3-MAS	
McKee						TGS / C2-CHE	
Vandergriff						TGS / D1-SSP	
Jonsson						TGS / B2-FAN	
Glasscock						TGS / A2-CHM	
Austin			Science Policy Forum		Science Diplomacy	TGS /C8-IMS	
Dallas					Seegene Forum	TGS / B1-MPS	LCP Orientation
Fort Worth					Yuhan Forum	TGS / C4-MSE	
Grapevine					KEIT Forum	TGS / C7-CIT	
Houston					KITECH Forum	TGS / C3-MAN	
San Antonio					KIAT Forum	TGS / C6-ECE	
Lone Star 1						TGS / C5-CEA	
Lone Star 2						TGS / C5-CEA	
Innovation A						FIRE	
Innovation B							
Innovation C							
Innovation D							
Wetzel				Mid-Career Luncheon		University Leaders Forum	

August 4 _ Friday _ 2023							
Room/Time	7-8:00 am	8-10:00	10:30-12:30pm	12:30-1:30pm	1:30-3:30pm	4-6:00pm	7-9:00pm
Aviator A	Breakfast			Lunch	Poster Set-up		Poster
Aviator B							
Foyer	Booth						
Enterprise Ballroom 1		Plenary	Keynote Symposium (PSE)				
Enterprise Ballroom 2							
Enterprise Ballroom 3							
Enterprise Ballroom 4							
Enterprise Ballroom 5			Keynote Symposium (LSE)				
Enterprise Ballroom 6							
Enterprise Ballroom 7			Keynote Symposium (CSE)			IES	IES Networking Dinner
Enterprise Ballroom 8							
Maverick			Keynote Symposium (WEC)			TGS / B3&C1-BME	Networking Dinner
Developers						TGS /C5-CEA	Networking Dinner / FP meeting
Wildcatters						TGS /C5-CEA	
Harvesters							
Carter						TGS / A1-PHY	Networking Dinner
Hobby					UNIST Forum	TGS / A3-MAS	
McKee						TGS / C2-CHE	
Vandergriff					KBSI Forum	TGS / D1-SSP	
Jonsson						TGS /B2-FAN	
Glasscock						TGS /A2-CHM	
Austin					SNU Forum	TGS /C8-IMS	
Dallas					KISTEP Forum	TGS /B1-MPS	
Fort Worth					KHIDI Forum	TGS /C4-MSE	
Grapevine					KEIT-SWRI Forum	TGS /C7-CIT	
Houston					KITECH Forum	TGS /C3-MAN	
San Antonio						TGS /C6-ECE	
Lone Star 1					KICT Forum	TGS /C5-CEA	
Lone Star 2						TGS /C5-CEA	
Innovation A						FIRE	
Innovation B							
Innovation C							
Innovation D							
Wetzel				Mid-Career Luncheon			

August 5 _ Saturday _ 2023					
Room/Time	7-8:00 am	8-10:00	10:30-12:30pm	1:30-6:00pm	6:00-12:00am
Aviator A	Breakfast				
Aviator B					
Enterprise Ballroom 1			Plenary : Closing		
Enterprise Ballroom 2					
Enterprise Ballroom 3					
Enterprise Ballroom 4					
Enterprise Ballroom 7		IES / Start-Up Pitch Competition			
Enterprise Ballroom 8					
Developers		KSEA History Forum			
Carter		TGS / A1-PHY			
Dallas		TGS /B1-MPS		LCP Meeting	
Fort Worth				APS Meeting	
Grapevine					
Lone Star 1					Council Meeting
Innovation A		FIRE		DSW	
Innovation B					
Innovation C					
Innovation D					

Plenary Schedule

August 3 _ Thursday _ 2023		
8:00–10:00 am	**Opening Ceremony** (Chaired by Dr. Sua Myong, Johns Hopkins U & Tae Joong (TJ) Park, MIT) • KSEA Introduction Video • National Anthems (Korea and USA) – Baritone Uram Park • Introducing Dignitaries & Sponsor Representatives • Opening Remarks - Yongho Sohn, President, Korean-American Scientists and Engineers Association, KSEA • Welcoming Remarks - Tai Sik Lee, President, Korean Federation of Science and Technology Societies, KOFST • Congratulatory Remarks - John Cornyn, US Senator for Texas (Video) - Andy Kim, U.S. Representative, 3rd Congressional District of New Jersey (Video) - Young Ho Jung, Consul General of the Republic of Korea in Houston • Award Ceremony Outstanding Contribution to KSEA Award Presented by MSIT Scientist of the Year Award Presented by KOFST Engineer of the Year Award Presented by KOFST • Plenary Lecture I Dr. Barry C. Barish, 2017 Nobel Laureate, Professor of Physics Emeritus at Caltech, President's Distinguished Endowed Chair at Stony Brook University "*Understanding our Universe with Gravitational Waves*" • Group Photo	Enterprise I-IV
10:00–10:30 am	Break	
10:30–12:30 pm	**UKC Keynote Symposium** - Physical Science and Engineering - Life Science and Engineering - Computational Science and Engineering - Workforce of the Future: Education and Careers	Enterprise I-VIII Maverick
12:30–1:30 pm	Luncheon	Aviator A-B
1:30– 3:30 pm	Distinguished Forums	Various
3:30 – 4:00 pm	Break	
4:00 – 6:00 pm	Technical Group Symposiums / Forums / FIRE / IES	Various
6:00 – 7:00 pm	Break	
7:00 – 9:00 pm	**UKC Banquet** (MC'd by Dr. Jennifer Cho, Millibatt & Nathan Han, Savills) • Music Performance: Mariachi Arraigo De America • Dinner • Welcome Remarks - Yongho Sohn, President, KSEA • Congratulatory Remarks - Tai Sik Lee, President, Korean Federation of Science and Technology Societies, KOFST • Music Performance - Guitarist Se-Hwang Kim - Dance Party: Spjork - The. Mashup. Band	Enterprise I-IV

August 4 _ Friday _ 2023		
8:00–10:00 am	**Plenary Session** (Chaired by Dr. Hyojin Kim, NJIT & Dr. Seung Hwan Allen Lee, MIT) • **Research Vision Talks I** - Hyeon Sik Kim, Vice President & CRO (Chief Research Officer) of K-water Research Institute "*K-water & K-water's smart water management*" - Haiyoung Jung, M.D. Ph.D. Chief Deputy Medical Director, SEEGENE Medical Foundation "*Clinical Research Centers in Seegene Medical Foundation*" - Joonyeon Chang , Director-General, Gangneung Institute of Natural Products, Korea Institute of Science and Technology, KIST "*Open R&D Platform for Strategic Technologies*" - Jaeho Yeom, President, TAEJAE University "*The Next Answer for the Future Education*" - Hyeonjun Kim, Vice President for Research, Korea Institute of Civil Engineering and Building Technology, KICT "*About KICT*" • **Plenary Lecture II** **-** Dr. Jin Hyung Lee, Associate Professor of Neurology, Stanford University *"Creating a 'Digital Twin' of the Brain""* • **Research Initiative Talks II** - Jae Young Kim, Executive Vice President for Research Affairs, Seoul National University "*SNU's Transformative Actions: Pioneering the Future"* - Yeol Choi, Dean of International Affairs, Kyungpook National University "*Public research-oriented university*" - Hocheol Shin, Head of KHNP Central Research Institute "*KHNP leads a Global Net-Zero Future*" - Young Hoon Ko, Senior Executive Vice President, R&D Director, Kumho Petrochemical "*Introduction of Kumho Petrochemical*" **KSEA Award Ceremony** • **Award Ceremony** - Graduate Scholarship Award Ceremony - Young Investigator Grant Award - Distinguished Sponsorship Award - Entrepreneur of the Year Award by Maeil Business Newspaper	Enterprise I-IV
10:00–10:30 am	Break	
10:30–12:30 pm	**UKC Keynote Symposium** • Physical Science and Engineering • Life Science and Engineering • Computational Science and Engineering • Workforce of the Future: Education and Careers	Enterprise I-VIII Maverick
12:30–1:30 pm	Luncheon	Aviator A-B
1:30– 3:30 pm	Sponsor Forums	Various
3:30 – 4:00 pm	Break	
4:00 – 6:00 pm	Technical Group Symposiums / FIRE / IES	Various
6:00 – 7:00 pm	Break (Poster Competition)	
7:00 – 9:00 pm	Networking Dinner (Poster Competition)	Various

August 5 _ Saturday _ 2023		
8:00–10:00 am	Forums / Technical Group Symposiums / FIRE / IES	Various
10:00–10:30 am	Break	
10:30–12:30 pm	**Plenary & Closing** (Chaired by Ms. Stella Kim, DSC & Dr. IL Minn, Johns Hopkins) • **Plenary Lecture II** - Youngsuk "YS" Chi, Chairman, Elsevier; Director of Corporate Affairs, RELX "*Navigating Careers in Science, Engineering, and Entrepreneurship in an Ever-Changing World*" • **Award Ceremony** - IES Award - UKC 2023 Paper Award - Appreciation to the KSEA 51st President • UKC 2024 Announcement, Tae (Tom) Hwan Oh, President-Elect of KSEA • Closing Remarks, Yongho Sohn, President of KSEA	Enterprise I-IV
12:30–1:30 pm	Break	
1:30–6:00 pm	• Data Science Workshop (Registration Required)	Innovation

Keynote Symposium

Physical Science and Engineering

Real Solutions to Real Problems Impacting Real People

August 3 _ Thursday _ 10:30am _ Enterprise Ballroom 1-4

Though the rapidly developing robotics and AI technologies are already having a major impact on our everyday lives, often times, we also see many research being conducted without much considerations on how these technologies will impact on our lives and society. AI and robotics can be powerful tools to solve real problems, but also have their own risks and hazards that can bring danger and potentially have a serious negative impact on our society. We would like to see what problems researchers are solving, who is affected by this and how they will impact our society. In this UKC 2023 Keynote Symposium, U.S. and Korean experts in robotics are invited to discuss how the current state of the art and future robotics and AI technologies may impact our everyday lives.

Chair

Dennis Hong

Director, RoMeLa Robotics & Mechanisms Laboratory

Professor, Mechanical & Aerospace Engineering, UCLA

Do Robots Need to Look Like Human?

In Hollywood, robots are often depicted in the humanoid form. Thus when we think of robots we naturally imagine humanoid robots. For robots to move around in a human environment and to do work using tools made for humans, it is natural to have robots that have the shape and size of a human. We have been developing humanoid robots at RoMeLa (Robotics & Mechanisms Laboratory) for more than a decade for fire fighting and disaster relief applications. However, such robots are still too slow, too unstable, too complex, too expensive, and too unsafe which prevent them to be used in real life situations. Do robots really need to look like human? We revisit this question and present some of the new exciting morphologies as solutions, discuss the creative process, and imagine our future with robots.

Dr. Dennis Hong is a Professor and the Founding Director of RoMeLa (Robotics & Mechanisms Laboratory) of the Mechanical & Aerospace Engineering Department at UCLA. His research focuses on robot locomotion and manipulation, autonomous vehicles and humanoid robots. His work has been featured on numerous national and international media. Washington Post magazine called Dr. Hong "*the Leonardo da Vinci of robots*." Dennis has been named to Popular Science's 8th annual "*Brilliant 10*", "*Forward Under 40*" by the University of Wisconsin-Madison Alumni Association, and also honored as "*Top 40 Under 40*" alumni by Purdue University. Hong's other past awards include the National Science Foundation's CAREER award, the SAE International's Ralph R. Teetor Educational Award, and the ASME Freudenstein / GM Young Investigator Award to name a few. Dr. Hong also actively leads student teams for various international robotics and design competitions winning numerous top prizes including the DARPA Urban Challenge where they won third place and the $500,000 prize, and the RoboCup, the international autonomous robot soccer competition where his team is now a five time World Champions in the Humanoid divisions and brought the Louis Vuitton Cup Best Humanoid Award to the United States for the very first time. Dr. Hong received his B.S. degree in Mechanical Engineering from the University of Wisconsin-Madison (1994), his M.S. and Ph.D. degrees in Mechanical Engineering from Purdue University (1999, 2002).

Paul Oh

Lincy Professor
Unmanned Aerial Systems
University of Nevada, Las Vegas (UNLV)

From Disaster Response to Consumer Robotics

The lines between consumer electronics and consumer robotics are blurry. For example, at the annual Consumer Electronics Show (CES) in Las Vegas, the list of robotics companies exhibits has grown to over 400. Furthermore driverless cars, drones, exo-skeletons, 3D printers and virtual-reality systems are examples of robots that have a consumer focus. This talk highlights observations of this phenomena. This is given in the context of an Age of Acceleration characterized by deep learning, cloud-computing, and artificial intelligence. The talk serves to suggest pathways for roboticists and their design and development endeavors.

Prof. Paul Oh is the founder and director of the Drones and Autonomous Systems Lab (DASL). Prior, he was in Drexel University's Mechanical Engineering Department from 2000-2014. He received mechanical engineering degrees from McGill (B. Eng 1989), Seoul National (M. Sc. 1992), and Columbia (PhD 1999) universities. He is a Fellow of NASA (2002), Naval Research Lab (2003), Boeing (2006) and ASME (2012). He received research (2004 NSF CAREER) and teaching (2005 SAE Ralph Teetor Award for Engineering Education Excellence) awards and authored over 150 publications and 3 books. From 2008-2010, he served as an NSF Program Director managing the robotics research portfolio. He has lead Teams DRC-Hubo, DRC-Hubo@UNLV and Avatar-Hubo for the 2012-2014, 2015, and 2018-2022 DARPA Robotics Challenges Semi-Finals, Finals, and Avatar XPrize respectively. He recently served as General Chair for IEEE IROS 2020 (IEEE Intelligent Robots and Systems) Conference which gathered over 25,000 online attendees.

Joohyung Kim

Associate Professor
Director of KIMLAB
Electrical and Computer Engineering
Mechanical Science and Engineering
University of Illinois Urbana-Champaign

Panelist: Joohyung Kim's research focuses on design and control for humanoid robots, system for motion learning in robot hardware, and safe human-robot interaction. He received BSE and Ph.D. degrees in Electrical Engineering and Computer Science (EECS) from Seoul National University, Korea, in 2001 and 2012. He was with Disney Research as a Research Scientist from 2013 to 2019. Prior to joining Disney, he was a postdoctoral fellow in the Robotics Institute at Carnegie Mellon University for DARPA Robotics Challenge in 2013. From 2009 to 2012, he was a Research Staff Member in Samsung Advanced Institute of Technology, Korea, developing biped walking controllers for humanoid robots.

Daniel Dongyuel Lee

Tisch University
Professor
Electrical and Computer Engineering
Cornell Tech

Panelist: Dr. Daniel Dongyuel Lee serves as Head of Global AI for Samsung Research. He received his B.A. in Physics from Harvard University and his Ph.D. in Condensed Matter Physics from the Massachusetts Institute of Technology. He was also a researcher at Bell Labs in the Theoretical Physics and Biological Computation departments. He is a Fellow of the IEEE and AAAI and has received the NSF CAREER award and the Lindback award for distinguished teaching. He was also a fellow of the Hebrew University Institute of Advanced Studies in Jerusalem, an affiliate of the Korea Advanced Institute of Science and Technology and organized the US-Japan National Academy of Engineering Frontiers of Engineering symposium and Neural Information Processing Systems (NeurIPS) conference. His group focuses on understanding general computational principles in biological systems and on applying that knowledge to build autonomous systems.

Mark Yim

Director of the GRASP Lab
Asa Whitney Professor
Mechanical Engineering
University of Pennsylvania

Panelist: Mark Yim established the oldest robotics research laboratory in the country in 1980. His research group focuses on hardware design. They have demonstrated robots ranging from a humanoid displayed at the Philadelphia Museum of Art to transforming robots that can change their shape to the smallest self-powered flying robot in the world. His current research focus includes reconfigurable truss robots that can help in search and rescue operations, swarms of small flying robots that can group into shapes that interact with humans and swarms of microscopic robots that can build structures. His other research interests include product design, robotic performance art, low-cost manipulation, in the search and rescue as well as healthcare applications. Honors include the Lindback Award for Distinguished Teaching (UPenn's highest teaching honor); induction to the National Academy of Inventors in 2018. He has over 50 patents issued (perhaps the most prominent patents are related to the video game vibration control which resulted in over US$100 million in litigation and settlements). He has started three companies, one in robotics, one medical device company and one focusing on thermal storage to reduce carbon impact. Prior to Penn, he spent ten years in industry including positions as Principal Scientist at the Palo Alto Research Center (formerly Xerox PARC) and Virtual Technologies, a virtual reality startup company before that. He received his PhD from Stanford University in Mechanical Engineering.

Physical Science and Engineering

Achieving Carbon Neutrality: Perspectives and Challenges

August 4 _ Friday _ 10:30am _ Enterprise Ballroom 1-4

Climate change driven by greenhouse gas (GHG) emissions is the defining challenge of our time, encompassing not only rising temperatures but also extreme weather events and a range of other impacts. Its effects are global in scope and unprecedented in scale, and they will continue to worsen as global temperatures and GHG emissions increase. Achieving carbon neutrality or net-zero emissions by balancing GHG emissions with removals from the atmosphere is critical to slowing climate change and minimizing its impacts. The keynote symposium will highlight the importance of a scientific understanding of decarbonization technologies, their deployment, and related policy implementation in the timely achievement of carbon neutrality targets. The session will also discuss the technical, economic, and public relations challenges of decarbonization.

Chair

Young-Shin Jun

Professor
Energy, Environmental and Chemical Engineering
Washington University in St. Louis

Dr. Young-Shin Jun received her B.S. and M.S. degrees from Ewha Womans University, holds S.M. and Ph.D. degrees in Environmental Chemistry from Harvard University, MA, and conducted postdoctoral research at the University of California-Berkeley/Lawrence Berkeley National Laboratory, CA. She investigates chemical reactions in energy-related subsurface systems including geologic CO2 sequestration. Further, based on nanoscale interfacial chemistry and solid nucleation, her research group also seeks new techniques and materials for more sustainable energy and the environment. Professor Jun received a 2008 Ralph E. Powe Junior Faculty Enhancement Award, a 2011 U.S. National Science Foundation CAREER award, the 2020 James M. Lee Memorial Award, and the 2022 Jackson Award. She was named a 2015 Kavli Fellow by the U.S. National Academy of Sciences, a 2016 Frontier of Engineering Fellow by the U.S. National Academy of Engineering, a 2018 Fellow of the Royal Society of Chemistry, and a 2019 Fellow of the American Chemical Society (ACS). She serves on ACS's Committee on Science as the Chair of the Science & Technology Subcommittee.

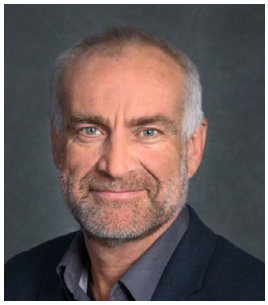
Photo/Sono Active Materials for Carbon-Neutral Society

The world is currently confronted with more challenges in the realms of energy, environment, food, and disease than ever before. In the light of these issues, our group has focused on investigating photo/sono active materials for energy recycling, carbon catalysts for environmental and food applications, and photodynamic therapy for treating cancer. To begin, our group has developed a dye-sensitized photo-rechargeable battery that operates wirelessly by harnessing low-intensity indoor light. This advancement holds promise for enhancing energy efficiency in buildings, contributing to a carbon-neutral society, and facilitating the widespread adoption of IoT devices. Additionally, we explore the integration of dye-sensitized solar cells with catalysts in a monolithic device to serve as a power source for hydrogen generation. Furthermore, our group has conducted research on sonocavitation and nebulization synthesis (SNS) utilizing an ultrasonic spray to synthesize frustrated type Lewis acid-base pairs (FLP) doped graphene nanopowder. SNS employs acoustic cavitation, which generates extreme conditions within collapsing bubbles (5000 K and 1000 bar). These unique conditions enable various chemical reactions that are typically inaccessible. We will demonstrate how the utilization of graphitic frustrated Lewis pairs (FLP) as catalysts enables the reduction of CO2 and N2, as well as urea production.

Tae-Hyuk Kwon

Dean, College of Natural Science
Professor, Department of Chemistry
Ulsan National Institute of Science & Technology (UNIST)

Dr. Tae-Hyuk Kwon earned a B.S. degree in Chemistry from Suwon University and a MS/Ph. D. degree in Chemistry from Seoul National University, Seoul, Korea. Prior to joining the UNIST, he worked as a Postdoctoral Researcher at the University of Melbourne, Melbourne, Australia under the guidance of Prof. Andrew B. Holmes. His current research interests are in the development of dye-sensitized solar cells, focusing on their applications in the field of green energy and biomedicine.



Jens Birkholzer

Senior Scientist and
Director
Energy Geosciences
Earth and
Environmental Sciences
Lawrence Berkeley
National Laboratory
(LBNL)

Towards Geologic CO_2 Sequestration at Scale: Geomechanical Impacts, Induced Seismicity Concerns, and Mitigation Measures

After decades of research on carbon capture and geologic sequestration (CCS), the world needs to finally move from pilot and demonstration experiments to industrial-scale implementation. CCS at scale will involve unprecedented fluid injection volumes that can result in large-scale pressure increases in the subsurface and may cause unwanted geomechanical effects, such as generating seismic events and caprock integrity concerns per reactivation of critically stressed faults. This presentation will start with a short description of the current worldwide status of CCS and its role as an important climate-mitigation technology. I will then illustrate basin-scale pressure and geomechanical impacts expected from industrial-scale implementation, based on regional modeling studies of future CCS scenarios. In terms of induced seismicity, I will present lessons learned from two field experiments—one being a controlled-injection fault slip experiment in a clay (caprock) formation which is highlighting the importance of aseismic leakage and its potential coupling to induced seismicity, the other a CO2 demonstration site where micro-seismicity has occurred along pre-existing basement faults—and will finally evaluate brine extraction as a mitigation measure currently tested in a deep reservoir in the southern United States.

Dr. Jens Birkholzer serves as the Director for the Energy Geosciences Division (EGD) in the Earth and Environmental Systems Area (EESA). EGD is a premier organization of ~250 staff and affiliates with expertise in energy geosciences and carbon management. Jens' research is related to evaluating the feasibility and environmental sustainability of a broad portfolio of geo-energy applications, with particular focus on the role of subsurface resources for carbon sequestration and removal. He has over 400 scientific publications, about 170 of which are in peer-reviewed journals. He serves on the Editorial Board of the International Journal of Greenhouse Gas Control (IJGGC), the Energies Journal (Geo-Energy Section), and is also an Editorial Policy Advisor for the Journal of Geomechanics for Energy and the Environment (GETE). Dr. Birkholzer leads the international DECOVALEX Model Comparison Project as its Chairman, is a Fellow of the Geological Society of America, and a Senior Fellow of the California Council on Science and Technology.

Life Science and Engineering

Innovative Discoveries on Regenerative Medicine

August 3 _ Thursday _ 10:30am _ Enterprise Ballroom 5&6

The Regenerative Medicine session will consist of two speakers who have pioneered the field of stem cell-based regenerative therapy. The topics will cover current update on stem-cell based therapy for brain and cardiovascular diseases. Dr. Kwang-Soo Kim from McLean Hospital/Harvard Medical School will present how basic molecular can be translated into novel therapeutic approaches for Parkinson's disease. Prof. Kim's group was the first to apply human iPSC-derived cells to a patient with Parkinson's disease. Dr. Young-sup Yoon from Emory University/Yonsei University will present their development of using human induced pluripotent stem cells, directly reprogrammed cells and engineering technologies for translation of basic discovery to clinical therapy of cardiovascular diseases.

Chair

Youngsup Yoon

Bruce R Logue Professor
Director of Stem Cell Biology
School of Medicine
Emory University

Distinguished Professor
Yonsei University

Cardiovascular Regeneration using Stem Cells, Reprogrammed Cells and Engineering: Bench to Bedside

Ischemic cardiovascular disease is the most common health burden worldwide. The discovery of stem or progenitor cells has provided new hope for many patients with advanced diseases, because cell therapy could alleviate ischemia by forming new vessels. Over the last decade, two new developments have emerged for cell-based therapy for cardiovascular disease: human pluripotent stem cell-derived endothelial cells (ECs) and directly reprogrammed or induced endothelial cells. I will present the recent development on these two types of cells in terms of preclinical development. In addition, we have developed various bioengineering approaches to improve transplanted cell survival and function. We have also been working on simultaneous reprogramming of somatic cells into a tissue-like structure, referred to as reprogrammed cardiovascular tissue (rCVT), which includes ECs, smooth muscle cells, and cardiomyocyte. Implantation of this rCVT onto the infarcted mouse heart reduced regional cardiac strains and improved cardiac function via direct cellular contribution, paracrine effects, and scaffolding effects. These new approaches can serve as a novel platform for cell-based therapy and drug discovery.

Young-sup Yoon, MD, PhD is Bruce R Logue Chair Professor and Director of Stem Cell Biology at Emory University School of Medicine and Distinguished Professor at Yonsei University. His research focuses on cardiovascular regeneration with stem cells, direct reprogramming, and tissue engineering. He is one of the pioneers in using stem cells for cardiac and vascular regeneration. His research has been continuously funded by grants from NIH, Department of Defense, and American Heart Association since 2004. He was elected as prestigious member of American Society for Clinical Investigation as the first Korean. He is Fellow of American Heart Association, a chartered member of NIH study section, and a member of editorial boards of the journals including Circulation Research, Molecular and Cellular Biochemistry (Associate Editor), Frontiers in Drug Discovery (Associate Editor). He also founded a company for the first-in-class clinical trial with human iPSC-derived endothelial cells for cardiovascular regeneration through Karis Bio Inc.

Kwang-Soo Kim

Director
Molecular Neurobiology Laboratory
McLean Hospital

Professor of Psychiatry
Harvard Medical School

Toward a Cure for Parkinson's Disease: From Bench to Bed and From Bed to Bench

Based on our studies of transcriptional regulatory cascade underlying development and maintenance of midbrain dopaminergic (mDA) neurons, we identified the orphan nuclear receptor Nurr1 as a promising therapeutic target of PD. Although Nurr1 was viewed as a ligand-independent, constitutively active transcription factor, we identified both synthetic and endogenous ligands of Nurr1 that prominently regulate Nurr1's function via direct interaction, suggesting that (1) Nurr1 is an "*adopted*" nuclear receptor (thus, "*druggable*") and (2) Nurr1's agonists can be developed as a novel class of mechanism-based, disease-modifying therapeutics for PD. In addition, given that major motor dysfunction of PD is caused by selective degeneration of midbrain dopamine neurons, cell replacement is a promising approach for PD. Thus, we are developing and optimizing human iPSC-based transplantation for autologous, personalized cell therapy and recently treated the first PD patient using the patient's own cells. At the same time, this clinical study revealed new challenges to be addressed. I will discuss how basic molecular studies can be translated into novel therapeutic approaches for PD and vice versa, demonstrating a proof-of-concept of "*bench to bed side*" and "*bed to bench*" approaches.

Kwang-Soo Kim, Ph.D. is a professor and Director of the Molecular Neurobiology Laboratory at McLean Hospital and Harvard Medical School. Based on his >30 years' experiences to investigate the transcriptional regulatory cascade of midbrain dopamine neuronal system, he has been focusing on translating his research to novel therapeutic development of Parkinson's disease (PD). In particular, he is focused on developing a novel neuroprotective drug as well as establishing an efficient platform for personalized autologous cell therapy of PD.

Life Science and Engineering

Innovative Discoveries on Brain Science

August 4 _ Friday _ 10:30am _ Enterprise Ballroom 5&6

Chair

Jin Mo Chung

Professor and Chair
Department of Neuro-biology
University of Texas Medical Branch

The Brain Science session will consist of three world renowned speakers covering a wide range of brain function spanning from newly discovered brain receptor function, to brain circuit connectivity, to a clinically applicable animal study. Dr. Uhtaek Oh from KIST will talk about the Physiological roles of a newly discovered mechanical sensing receptor in brain function. Dr. Jin Hyung Lee from Stanford University will then discuss how to solve brain circuit function and dysfunction with computational modeling and optogenetic imaging techniques. As an example of an animal study for a disease model, Dr. Jun-Ho La from University of Texas Medical Branch will discuss how chronic pain develops from non-chronic injuries in a sex-dependent manner in mice models of pain.

Co-Chair and Presenter

Uhtaek Oh

Principal Investigator and Director
Brain Science Institute
Korea Institute of Science and Technology (KIST)

Tentonins are mechanically activated channels required for essential functions

Mechanotransduction is a biological process of the conversion of mechanical stimuli into biological responses. Numerous physiological functions such as touch, pressure sensation, hearing, blood pressure sensing, proprioception, and pain require mechanotransduction. Mechanotransduction starts with mechanosensitive (MS) channels in many mechanosensory cells. In the present seminar, we will introduce a novel MS channel gene, Tentonin 3 (TTN3), that elicits MS currents with slow inactivation kinetics distinct from Piezo channels. How TTN3 is different from Piezo1 and 2 will be discussed. A piece of evidence that TTN3 is a bona-fide MS channel, not a regulator of Piezo1 will also be presented. Physiological roles of TTN3 in proprioception, baroreceptor function, and beta-cell functions in pancreas will be summarized.

Dr. Uhtaek Oh is a principal researcher and a former director of the Brain Science Institute of KIST. Before this, Dr. Oh had been a professor of Seoul National University for a long time. His main research field has been ion channels that are essential for numerous physiological functions. This research field requires heavy knowledge on electrophysiology as well as molecular biology. Luckily, Dr. Oh found two important ion channels, Anoctamin 1 and Tentonin 3. As the head of a neuroscience institute, Dr. Oh is also interested in recently developed technology in neuroscience, such as neurotools for studying complex circuits of the brain.

Jin Hyung Lee

Associate Professor
Neurology and
Neurological Sciences,
Bioengineering,
Neurosurgery, and
Electrical Engineering
(Courtesy)
Stanford University

Solving brain circuit function and dysfunction with computational modeling and optogenetic fMRI

Neurological and psychiatric disorders are dramatically increasing in prevalence due to aging population and social isolation. However, to date, there is no cure for any of the brain disorders. The goal of brain disorder treatments is to restore the brain's function. Therefore, a key challenge is to quantify the brain function underlying behavior. Once the brain function algorithms underlying behaviors of interest can be quantitatively defined, minimizing the normal and diseased brain function difference can be defined as the objective function for the brain disorder treatment. The variables then can be optimized to minimize the objective function. In order to quantify the brain function algorithms underlying behavior, cell type specific whole brain function measurements are necessary. We utilize optogenetics combined with fMRI (ofMRI) to enable such measurements. Through computational modeling of ofMRI data, the functional interactions among different regions of the brain was then quantified. In combination with electrophysiological measurements, we further model brain function at a cellular level. In order to further understand the circuit, pathology relationship, we also utilize brain clearing methods to longitudinally quantify and model pathology. Through these efforts, we aim to enable systematic design of therapeutic interventions necessary for the treatment of brain disorders.

Jin Hyung Lee, PhD is an Associate Professor of Neurology and Neurological Sciences, Bioengineering, Neurosurgery, and Electrical Engineering (Courtesy) at Stanford University. Dr. Lee received her Bachelor's degree from Seoul National University and Masters and Doctoral degree from Stanford University, all in Electrical Engineering. She is a recipient of the 2008 NIH/NIBIB K99/R00 Pathway to Independence Award, 2010 NIH Director's New Innovator Award, 2010 Okawa Foundation Research Grant Award, 2011 NSF CAREER Award, 2012 Alfred P. Sloan Research Fellowship, 2012 Epilepsy Therapy Project award, 2013 Alzheimer's Association New Investigator Award, 2014 IEEE EMBS BRAIN young investigator award, 2017 NIH/NIMH BRAIN grant award, and 2018 Lina 50+ Award Grand Prize, and 2019 NIH Director's Pioneer Award. As an Electrical Engineer by training with Neuroscience research interest, her goal is to analyze, debug, and engineer the brain circuit through innovative technology.

Jun-Ho La

Associate Professor
Department of
Neurobiology
University of Texas
Medical Branch (UTMB)

Sex differences in pain chronification

Acute injury-induced pain can transition to chronic pain (pain chronification) which predominantly affects women. To understand its mechanisms, we developed a new murine model of pain chronification in which postinjury stimulation of an acute injury area triggers pain chronification without affecting the resolution of the acute injury. Female mice have greater sensitivity and a wider timeframe for postinjury stimulation to trigger pain chronification. The resultant chronic pain state is maintained by ongoing nerve activity at the inciting injury area in females but by reactive spinal microglia in males. In the absence of estrogen, females develop pain chronification that is maintained by none of the two mechanisms. In males, spinal GABAergic disinhibition is critical for normally innocuous peripheral stimulation to activate spinal microglia. Unlike males, females develop pain chronification only when GABAB receptor-mediated spinal inhibition is impaired, which is not dependent on spinal microglia. These results suggest that treatments for pain chronification need the consideration of mechanistic sex differences.

Dr. La received his PhD in veterinary physiology from Seoul National University studying the mechanisms of intestinal dysmotility and visceral pain in a rat model of irritable bowel syndrome. During his postdoctoral training at Gyeongsang National University, he investigated the functional expression of two-pore domain (K2P) channels in dorsal root ganglion (DRG) neurons. As a postdoctoral associate and Research Assistant Professor at the University of Pittsburgh, Dr. La studied long-term changes in DRG neurons in visceral pain conditions. Currently, at UTMB, his research focuses on mechanisms of pain chronification without underlying persistent tissue injury.

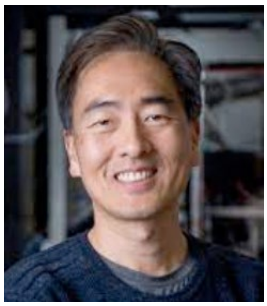
Computational Science and Engineering:

Advances in Quantum and High Performance Computing

August 3 _ Thursday _ 10:30am _ Enterprise Ballroom 7&8

High performance computing is at the heart of modern technology, enabling computational sciences, artificial intelligence and information technology. Customized computational resources are deployed in hybrid high performance computing environments to support optimized execution of critical tasks. Quantum computers provide a promise for tackling challenging problems that are intractable using conventional computational capabilities. This symposium will discuss advances in high performance computing, and explore the future trends enabled by quantum computing in hybrid HPC environment.

Chair



Jungsang Kim

Schiciano Family
Distinguished
Professor
Electrical and Computer
Engineering and Physics
Duke University
Co-Founder and CTO
IonQ

Jungsang Kim is the Schiciano Family Distinguished Professor of Electrical and Computer Engineering and Physics at Duke University, and a Co- Founder and Chief Technology Officer of IonQ, Inc. Kim has pioneered the technology development, system engineering and commercialization of quantum computers based on trapped atomic ions, by leading numerous multi-disciplinary collaborative research initiatives in the US. Prior to Duke University, Kim was a Member of Technical Staff and Technical Manager at Bell Laboratories, leading the development and commercialization of large- scale optical switches and wireless communication systems. He received his Ph.D. degree in Physics from Stanford University (1999) and BS degree in Physics from Seoul National University (1992). He is a Fellow of the American Physical Society and Optica (formerly Optical Society of America).

Quantum Computers: Applications and Implementations

Quantum computers exploit the bizarre features of quantum physics - uncertainty, entanglement, and measurement - to perform tasks that are impossible using conventional means, such as computing over huge amounts of information, and communicating via teleportation. I will summarize the foundations of quantum computation and the potential exponential scaling quantum computers may hold over conventional computation, along with some examples of quantum speedups based on the parallelism of quantum superposition. I will conclude with a summary of the leading quantum computer architectures, particularly those based on individual atoms, suspended and isolated with electric fields, and individually addressed with laser beams. Ion trap quantum computers have essentially perfect idle qubit/spin coherence properties with fully-connected and reconfigurable entanglement operations. I will present recent results with state-of-the-art ion trap quantum computer systems and simulators, from both the Duke Quantum Center and IonQ, Inc., and summarize the outlook for further scaling of ion trap quantum computers based on a well-defined and modular architecture.

Christopher Monroe

Gilhuly Family
Presidential
Distinguished Professor
Electrical and Computer
Engineering and
Physics
Duke University
Co-Founder and Chief
Scientist
IonQ, Inc.

Christopher Monroe is the Gilhuly Family Presidential Distinguished Professor of Electrical and Computer Engineering and Physics at Duke University, and the Co-Founder and Chief Scientist of IonQ, Inc. Monroe has pioneered nearly all aspects of trapped ion quantum computing and simulation, from the demonstration of the first quantum gate, a monolithic semiconductor chip ion trap, and photonic interconnections between separated ion trap systems. He is a key architect of the US National Quantum Initiative, a Fellow of the American Physical Society, Optical Society of America, the UK Institute of Physics, the American Association for the Advancement of Science, and is a member of the National Academy of Sciences.

Jaejin Lee

Dean
Graduate School of
Data Science

Professor
Department of
Computer Science and
Engineering

Seoul National
University

Quantum Computing, Deep Learning, and Accelerated Computing

The deep learning language models, which have recently been in the limelight, require supercomputer-level computing resources that are made up of hundreds or thousands of GPU computer systems when training. Quantum computing is a fundamentally different computing paradigm and is seen as a future option to solve the intractable problems of classical computing using digital computers. However, current quantum computers are still noisy and error-prone, so classical simulation of quantum circuits is essential for the verification of quantum computers and the development of complex quantum algorithms. Classical simulations of large quantum systems mainly use supercomputers because they require exponential memory space and computational complexity depending on the number of qubits. Accelerated computing is a method of mixing a traditional CPU with an accelerator. It is a computing model that reduces computing time by accelerating a specific task in a special processor called an accelerator. Currently, GPUs, FPGAs, and NPUs are mainly used as accelerators. This talk examines the relationship between quantum computing, deep learning, and accelerated computing, and discusses the desirable research direction from the software point of view.

Jaejin Lee is the Dean of Graduate School of Data Science and Professor at the Dept. of Computer Science and Engineering at Seoul National University (SNU). He also serves as the Director of the Center for Optimizing Hyperscale AI Models and Platforms and the Thunder research group at SNU. He received his Ph.D. degree in Computer Science from the University of Illinois at Urbana-Champaign (UIUC) in 1999. He received an MS degree in Computer Science from Stanford University in 1995 and a BS degree in Physics from SNU in 1991. After obtaining the Ph.D. degree, he spent half a year at UIUC as a visiting lecturer and postdoctoral research associate. He was an assistant professor in the Department of Computer Science and Engineering at Michigan State University from January 2000 to August 2002 before joining SNU. He is an IEEE fellow.

Alexander (Lex) Kemper

Associate Professor
Department of Physics
North Carolina State
University

Opportunities for Quantum/Classical Computing

Quantum computing has the potential to help us overcome the barriers that are presented by the end of Moore's law. In the natural sciences, these barriers appear as limitations in computer memory and/or processing speed which prevent scientists from describing the problem fully and forcing them to work on smaller models or with approximate methods. Since nature is fundamentally quantum, it is quite natural to view a quantum computer as a bespoke quantum simulator, where we can examine the open problems in science at a scale not possible with classical computers. In this talk, I will present how this is achieved, discuss some recent advances in the area. In addition, I will discuss the limitations of quantum computing, and where classical computing can play an important role, for both today's quantum hardware and going into the fault-tolerant quantum era.

Lex Kemper is an associate professor in the Department of Physics at North Carolina State University. His work centers at the intersection of quantum computing and condensed matter physics, where his group is studying how near- and future-term quantum computers could be of use in solving outstanding problems in physics. He received his Ph.D in Physics from the University of Florida in 1999, following a BS degree in Physics and Mathematics from the same institution. After obtaining his Ph.D., he spent 2 years at Stanford as a postdoctoral research associate, and 3 years at Lawrence Berkeley National Laboratory as an Alvarez Fellow before joining NC State.

Computational Science and Engineering:

Artificial Intelligence (AI) and Cybersecurity

August 4 _ Friday _ 10:30am _ Enterprise Ballroom 7&8

Chair

Tae (Tom) Oh

Professor- iSchool
Golisano College
of Computing and
Information Sciences
Strategic Initiatives and
Innovation Director
National Technical
Institute of Deaf
Rochester Institute of
Technology (RIT)

The impact of the industrial and digital (information) revolutions has, undoubtedly, been a substantial advancement in our industry, social media, and e-commerce. In addition, AI and cybersecurity have impacted extensive changes and breakthroughs affecting all aspects of our society and life. This results in a richly interconnected organization with decision-making using machine learning and exploiting "*big*" data in a safe and secure environment. Now, consumers can buy goods, and businesses can obtain services from anywhere in the world using the Internet and exploiting the unlimited possibilities using the widespread usage of AI and cybersecurity inventions. The highly selected speakers will share their perspectives on AI and cybersecurity advancements, research, industry, and challenges in this session. Also, they will share the future trends in their area of expertise.

Tae Hyun Hwang

Endowed Chair
Florida
Dept. of Cancer Biology
Mayo Clinic
Comprehensive
Cancer Center

Unraveling Cancer's Complexity: Single-Cell and Spatial Genomics Meet Machine Learning and AI for Personalized Immunotherapies and Cellular Therapies

In this talk, we will delve into how single-cell and spatial genomics, combined with machine learning and AI, can revolutionize biomarker identification and the development of personalized immunotherapies for cancer treatment. By analyzing sequential single-cell CAR-T and PBMC data from CD19 CAR-T cell treated patients, we aim to uncover novel biomarkers and combinatory therapies. Additionally, we will discuss AI-guided biomarker discovery and therapeutic strategies specifically tailored for gastric cancer immunotherapy, ultimately paving the way for more targeted and effective treatments in the rapidly evolving field of oncology.

Dr. Tae Hyun Hwang is a renowned researcher in cancer, holding the prestigious position of Endowed Chair at Mayo Clinic Florida. Focusing on using artificial intelligence (AI) and advanced computing techniques to improve patient outcomes, Dr. Hwang works closely with top healthcare institutions and businesses, including pharmaceutical companies and start-ups, to develop innovative solutions for complex medical challenges. With a strong background in both computer science and medicine, Dr. Hwang's work bridges the gap between these fields, enabling the development of cutting-edge treatments for cancer and heart diseases. In addition to his work at Mayo Clinic, Dr. Hwang has held positions at several prestigious institutions, such as Cleveland Clinic and the University of Texas Southwestern Medical Center. He also leads a team of 20 researchers at the ML and AI Lab, where they work together to advance the use of AI and machine learning in medical research. As a testament to his innovative approach, Dr. Hwang co-founded KURE.AI and KURE.AI Therapeutics, a clinical stage cellular therapy company that develops personalized cell therapy products using AI technology.

Minkyong Kim

Engineering Director
Artificial Intelligence
Machine Learning
Apple

AI Voice Assistants in Industry: Past, Present, and Future.

Voice assistants have become increasingly popular in recent years. These devices use a combination of speech recognition, natural language understanding, and dialogue management to understand and respond to user requests. However, there are still challenges to be addressed before voice assistants can reach their full potential. These challenges include ensuring the safety of generated responses, optimizing for on-device processing, and better understanding how people interact with voice assistants. This talk provides a comprehensive overview of the past and present as well as the challenges and opportunities that voice assistants face in the future.

Minkyong is Engineering Director at Apple, focusing on Siri Voice Assistant. Before joining Apple, she worked as VP at Samsung Electronics in Korea, leading the development of Bixby Voice Assistant for smart appliances. She also worked as the chief coordinating officer for Samsung Global AI Centers. Before that, she worked at IBM T.J. Watson Research Center in New York for ten years focusing on the design and development of IBM Cloud, Messaging Systems, and Stream Processing. She received her Ph.D. in Computer Science and Engineering from the University of Michigan and her M.S. and B.S. in Computer Science and Engineering from Seoul National University. She holds 40+ patents and published 30+ papers at top conferences and journals.

Jeremy Epstein

Program Director
Secure and Trustworthy Cyberspace (SaTC) Lead
Division of Computer and Network Systems (CISE/CNS)
National Science Foundation (NSF)

Cybersecurity Research – Yesterday, Today, and Tomorrow

Cybersecurity and privacy are no longer just technical topics, if they ever were. In the early days, cybersecurity meant encryption, and was closely tied to mathematics. Over the intervening decades, it was mostly confined to computer science. Today, it covers computer science and computer engineering, but also many areas in social sciences, ethics, education, mathematics, statistics, law, policy, business, and even biological sciences. Some even argue that it impacts the arts. The National Science Foundation is undergoing a rethinking of the cybersecurity & privacy field, and how research should be supported and funded for the next decade. Simultaneously, the White House's interagency research coordinating group, Networking and Information Technology Research & Development National Coordinating Office, is working on a rethinking of the Congressionally-mandated Federal Cybersecurity Research Strategy. And in March 2023, the White House Office of the National Cyber Director released the National Cybersecurity Strategy, which includes a section on cybersecurity & privacy research. This talk will bring together these threads of US government activity to describe how government-funded cybersecurity & privacy research will evolve over the next decade, and how they may impact non-governmental research.

Jeremy Epstein leads the National Science Foundation's Secure and Trustworthy Cyberspace (SaTC) program, NSF's flagship multi-disciplinary cybersecurity research effort. Over the past decade, SaTC has sponsored nearly 4000 research projects and almost $1B in spending, and is currently revisiting its mission to focus on the next decade. In addition to leading the SaTC program, Jeremy co-leads the US government's interagency research program for cybersecurity through the Networking and Information Technology Research & Development Cybersecurity & Information Assurance Interagency Working Group (NITRD CSIA IWG), where he is responsible for the National Cybersecurity Research Strategy. His research interests include securing voting and elections. In addition to his work at NSF, he is chair of the Association for Computing Machinery's US Technology Policy Committee (ACM USTPC), a non-partisan scientific expert group providing technical advice on a wide range of computing policy issues. He is also founder and director of the Scholarships for Women Studying Information Security (SWSIS) program.

Workforce of the Future: Education and Careers

Convergence in Education and Workforce Development

August 3 _ Thursday _ 10:30am _ Room Maverick

Chair

Gloria J. Kim

Department of
Engineering Education
University of Florida

Powerful technologies, such as artificial intelligence, automation, robotics, and the internet of things, are disrupting the nature of work and reshaping the landscape of jobs. New forms of learning, skills assessments, and job training are exposing pitfalls of traditional degree-centric requirements in tech hiring. The approach to developing and sustaining talent supply chain must change. This UKC 2023 Keynote Symposium explores convergent perspectives on education and workforce development. Experts and stakeholders are invited to offer insights on how the benefits of emerging technology can be leveraged to equitably impact current and future workforce.

Topical Plenary

Curtis J. Bonk

Professor, School of
Education
Indiana University
2022 American
Educational Research
Association (AERA)
Fellow

Technology Today, Technology Tomorrow: Might Learning Evolutions lead to Learning Revolutions?

Change is inevitable. Technology change is pervasive. Yesterday's technologies wiped entire industries and occupations. Today's technologies are accelerating these changes, and are, in particular, transforming the field of education. Learning is definitely changing. Generative AI has accelerated everything. There is now a pervasive need for innovations in how we teach and how we learn. In response, Professor Bonk will detail a set of 20 "*last*" principles of instruction including (i.e., flexibility, autonomy, meaningful learning, choice, etc.) and he will also highlight new roles for instructors in light of these principles. Next, he will discuss these in light of three megatrends related to learning technology today: (1) the technologies for engagement; (2) the technologies for pervasive access; and (3) the technologies for the personalization and customization of learning. In the third decade of the 21st century, learning has become increasingly flipped, social, collaborative, global, game-like, mobile, modifiable, open, online, visually-based, hands-on, ubiquitous, personal, and much much more. Is this an evolution or a revolution?

Curtis J. Bonk is Professor in the School of Education at Indiana University (IU) teaching psychology and technology courses and Adjunct in the School of Informatics at IU. He is a former software entrepreneur, certified public accountant, corporate controller, and educational psychologist who presently is an educational technologist, award-winning writer, highly published researcher, statewide and national awardee in innovative teaching with technology, and internationally acclaimed presenter. Curt is the author of nearly 400 publications and has given close to 2,000 talks around the world. In 2020, Curt was awarded the IU President's Award for Excellence in Teaching and Learning Technology and in 2021, he received the David H. Jonassen Excellence in Research Award. Recently, the American Educational Research Association named him a 2022 AERA Fellow for his exceptional contributions to, and excellence in, education research, and in 2023 AERA recognized him with the Outstanding International Research Collaboration Award for his joint research with Professor Min Young Doo at Kangwon National University in Korea. Curt co-hosts the weekly award-winning podcast show, Silver Lining for Learning (https://silverliningforlearning.org/). He can be contacted at cjbonk@indiana.edu and his homepage is http://curtbonk.com/.

Wookyung Sun

Visiting Professor
Dept. of Electrical and Computer Engineering
Seoul National University

100,000 by 2026: The COSS Project

The high-tech innovation convergence university project (COSS: Convergence and Open sharing System) is a project that breaks down the boundaries between universities and transcends the walls between departments, enabling any student to pursue education in their desired cutting-edge field irrespective of their major. The goal of this project is to foster 100,000 skilled students in the digital high-tech field by 2026, based on the principles of convergence, openness, and cooperation. The consortium in 13 fields is composed of universities and colleges nationwide. The project is scheduled to run for a period of 6 years, with the government supporting the project cost of 9 million dollars per consortium. In this talk, we will introduce specific details about the COSS project and discuss how the Korean government approaches education to foster future talents in preparation for the Fourth Industrial Revolution.

Dr. Wookyung Sun is currently participating in various human resource development programs related to the next-generation semiconductor industry at Seoul National University in Korea. She worked at HYNIX Semiconductor Inc. research center for ten years, focusing on the cell transistor design and process integration of DRAM. She received her B.S., M.S., and Ph.D. in electronics engineering from Ewha Womans University in Seoul, Korea. Her current research interests include memristor devices for neuromorphic engineering and spiking neural network algorithm modeling.

Junseok Hwang

Professor of Information Science and Technology
Technology Management, Economics, and Policy Program (TEMEP)
Seoul National University

Smart City Education and Training

Prof. Hwang received his Ph. D. in Information Science and Telecommunications from the University of Pittsburgh, a. He began his academic career as an Assistant Professor in the School of Information Studies at Syracuse University. He is the Director of Global R&DB Center, International Technology Professional Program (ITPP), ASEAN Smart City Professional Program, and Transdisciplinary Graduate Program in Smart City Global Convergence (SCGC) at Seoul National University. He has educated and advised more than 200 post graduate government officials, public researchers, academic and industry leaders from about 50 countries as global leaders of ICT innovation and smart city development. Along with the world-wide network of Technology Management, Economics and Policy Program (TEMEP), International Technology Professional Program (ITPP) and Smart City Global Convergence Program (SCGC), he hosts annual International Symposia on Green, Smart, Development and Vision (GSDV) to exhibit transdisciplinary ICT innovation research and practices as a part of global knowledge sharing and collaboration. Currently, he is leading the national funded BK21 program, Smart City Global Convergence (SCGC) Program in SNU as a program director with the dedicated mission of educating international technology specialists and smart city experts from around the globe. His current research focuses on economics of information and networks, management and policy of convergence technologies, social impact study and forecasting of emerging technologies, knowledge and intelligence management. Recent research areas also include smart city technology innovation, sustainability of technology management, appropriate technology for developing economy and community, fourth industrial revolution education, digital transformation.

Charles G. Woychik

Senior Director of Advanced Packaging Platforms
SkyWater Technology

Developing the Talent of the Future through Partnerships

Dr. Charles G. Woychik is Senior Director of Advanced Packaging Platforms at SkyWater Technology in Kissimmee, FL. Prior to joining SkyWater he was the Chief Scientist at i3 Microsystems in St. Petersburg, FL. Other previous positions that he held were: Senior Director of 3D Technologies at Invensas Corporation and Senior Scientist at GE Global Research Center. Most of his career was at IBM Endicott, NY where he held both engineering and managerial positions. His area of expertise is materials and processes for advanced electronics packaging. He holds a Doctorate and Master of Science degree in Materials Science and Engineering from Carnegie-Mellon University. He has a Bachelor of Science degree in Metallurgical Engineering from the University of Wisconsin-Madison. Chuck has presented at numerous conferences and has many publications. He has 123 issued US issued patents to his credit.

Workforce of the Future: Education and Careers

Future Careers in Technology and Entrepreneurship

August 4 _ Friday _ 10:30am _ Room Maverick

The job market, particularly in technology, is constantly evolving with changes such as hybrid remote work, job automation by artificial intelligence, and increasing interests in entrepreneurship and startups. To succeed in the future job market, individuals must stay up to date and adapt to new technologies and the market environment. This keynote symposium targets mid-career and young professionals, as well as the young generation. It will feature speakers discussing future careers in technology and entrepreneurship, how to acquire new job skills, advance in corporate careers, or start a company. The symposium will culminate in a speaker panel session with an open discussion and Q&A.

Chair

Kyeong Ho Yang

Founder & President
Korean-American Innovative Technology Engineers and Entrepreneurs (KITEE)

Kyeong Ho Yang is a technologist and innovator in the fields of video processing, multimedia communication systems, and data science. He has nearly 30 years of R&D experience at companies of various sizes from startups to large R&D labs like Bell Laboratories. He has published over 50 papers in peer-reviewed journals and conferences and holds 40 U.S. patents. He is also an entrepreneur who co-founded multiple technology companies in multimedia communications, mobile apps, and EdTech. Recent years, he has been very actively advising Korean startup CEOs through KITEE that he founded in 2015. He has also led the entrepreneurship activities in the Korean-American Scientists and Engineers Association (KSEA), serving as the founding Chair of the KSEA STEP-UP Conference (2020 and 2021) and Chair of the Innovation & Entrepreneurship Symposium at the US-Korea Conference (Co-Chair in 2019 and 2020, Chair in 2021 and 2022), among others. Through these R&D and entrepreneurship activities, Dr. Yang has successfully established strong relationships with people in various areas including academia, industry, startups, business, and government agencies. He received his B.E., M.S., and Ph.D. degrees, all in Electronics Engineering, from Seoul National University.

Co-Chair

Benjamin Lee

Senior Research Associate
Weill Cornell Medicine

Benjamin C. Lee is a Senior Research Associate in Radiology at Weill Cornell Medicine (WCM). His current research involves developing machine learning algorithms for cardiovascular medical imaging in CT, Echo, ECG, and histopathology data for heart failure, heart transplantation, and coronary plaque characterization. Prior to working at WCM, he was a research scientist in industry for over 10 years at INVIA Medical Imaging Solutions in Michigan researching advanced algorithms for the 4DM nuclear medicine (PET, SPECT) cardiac quantification software. His research interests also include biomedical image segmentation, motion correction, image coregistration, kinetic analysis, and inverse problems. For KSEA, he has also helped lead and organize the Data Science Workshop at UKC for the past 5 years, was the Michigan Chapter President and a TG Councilor and chaired national Young Generation conferences. He received both his Ph.D. and M.S. at the University of Michigan, Ann Arbor in Electrical Engineering and his B.S. from Cornell University.

Stella H. Kim

Chief Marketing Officer
& Global VP
Head of Executive
Search
HRCap, Inc.

Future of Work and Career Development

This talk first reviews the evolving job market, particularly in technology, with changes such as hybrid work, job automation, glocalization, and new technologies and vast amounts of information that become available at workplaces. Then, Stella will guide next-gen leaders on how to build greater self-awareness and learning agility to succeed in the future job market. She will also speak on the importance of proactively taking accountability, reskilling and upskilling, and serving as a multigenerational and multicultural bridge. She will finally touch on key topics of professional development, job transitions, and career changes.

Stella H. Kim is a 1.5 generation Korean-American talent executive, modern HR leader, and change agent. Stella is an official Forbes HR Council member and Chief Marketing Officer at HRCap, Inc., the largest Asian-American Executive Search & Total HR Solutions Provider. Formerly, she was a Talent Analytics Specialist and Senior Strategy & Analytics Consultant at IBM. Stella is an expert in identifying capability gaps and unlocking opportunities to empower greater potential in individuals, organizations, and communities. She aids decision making with a data-driven macro-view of the labor economy while driving deep empathy with a social-organizational micro-approach. Stella holds a Bachelor's degree in Economics from Princeton University and a Master's degree in Social-Organizational Psychology from Columbia University.

Chang Kim

Former CEO and
Founder of Tapas Media

Career as an Entrepreneur and Careers at Startups

This talk explores the world of entrepreneurship and sheds light on the journey of founding and exiting a startup. Chang Kim ("CK"), the founder of Tapas Media, will share his experience as an entrepreneur with the audience, discussing the challenges and rewards of starting your own business, and the skills and experience you need to be successful. CK will also talk about the diverse roles and responsibilities available at startups and the opportunities for growth and development that these companies can offer. Join us to gain practical knowledge and a deeper understanding of the entrepreneurial landscape.

Chang Kim ("CK") is a 2x founder and angel investor/adviser for 50+ companies. CK is the original founder and former CEO of Tapas Media, a mobile storytelling platform and community for original IP creators in the US. In 2021, Tapas Media was acquired by Korea's Kakao Entertainment at a $510M valuation. Prior to this, he was a product manager at Google, running Blogger. He joined Google when it acquired TNC, a leading blogging software company in Asia that he co-founded. Before TNC, CK was at Samsung, in charge of Samsung's mobile content strategies. He has a B.S. degree in Physics from the University of Michigan and also studied at Seoul National University.

Anna Ji-Hyun Lee

Director
Prellis Biologics

Panelist: Anna Lee is the Director of Antibody Screening at Prellis Biologics. She joins Prellis with extensive experience in platform development for antibody discovery, having worked for several leading biotech and pharmaceutical companies such as the U.S. Military HIV Research Program, Regeneron, Bristol-Myers Squibb, and IGM Biosciences. She holds an undergraduate degree from the University of Virginia, where she pursued studies in Chemistry and Bioethics, and Master's degrees in Chemistry and Bioinformatics from Villanova and Johns Hopkins University.

Technical Symposium

Technical Symposium Group

Technical Group A-1	**Physics (PHY)**	Chair: Harold D. Kim (Georgia Institute of Technology) Co-Chairs: Yoonseok Lee (University of Florida), Soonwon Choi (Massachusetts Institute of Technology)
Technical Group A-2	**Chemistry (CHM)**	Chair: Jiwoong Park (University of Chicago), Co-chairs: Dong Hee Son (Texas A&M University), Hoi Sung Chung (National Institutes of Health)
Technical Group A-3	**Math/Applied Math/Statistics (MAS)**	Chair: Young-Ju Lee (Texas State University), Co-Chairs: Seungil Kim (Kyung Hee University), Jangwoon Lee (University of Mary Washington)
Technical Group B-1	**Medical and Pharmaceutical Science (MPS)**	Chair: Tae-Hyung Kim (University of New Mexico) Co-Chairs: Jiyoung Lee (George Washington University), Hun-Goo Lee (Massachusetts General Hospital/Harvard Medical School)
Technical Group B-2	**Food, Agriculture, Ecology and Nutrition (FAN)**	Chair:Yoo Kim (Oklahoma State University) Co- Chairs: Sungeun Cho (Auburn University), Kee Hong Kim (Purdue University)
Technical Group B-3 / C-1	**Biological and Biomedical Sciences (Biology, Molecular Biology, Cognitive Science, Botany, Zoology, Biomechanics, etc.)/Bioengineering and Biomedical Engineering (BME)**	Chair: Hyunjoon Kong (University of Illinois at Urbana-Champaign) Co-Chairs: Deok Ho Kim (Johns Hopkins University), Young Bin Choy (Seoul National University)
Technical Group C-2	**Chemical, Textile, Energy, and Nuclear Engineering (CHE)**	Chair: Hyun-Tae Hwang (University of Kentucky) Co-Chair: Jaewon Lee (University of Missouri)
Technical Group C-3	**Mechanical, Aerospace and Naval Engineering (MAN)**	Chair: Eon Soo Lee (New Jersey Institute of Technology) Co-Chairs: Martin Byung-Guk Jun (Purdue University), W. Jong Yoon (University of Washington, Bothell)
Technical Group C-4	**Materials Science and Engineering, Nanotechnology (MSE)**	Chair: Jiyoung Kim (University of Texas at Dallas) Co-Chairs: Chang-Yong Nam (Brookhaven National Laboratory), Jang-Sik Lee (POSTECH)
Technical Group C-5	**Civil and Environmental Engineering, Architecture (CEA)**	Chair: Youngguk Seo (Kennesaw State University) Co-Chair: Jung Heum Yeon (Texas State University)
Technical Group C-6	**Electrical and Computer Engineering (ECE)**	Chairs: Jin W Choi (Michigan Technological University) Co-Chairs: Wookyung Sun (Seoul National University), Jeongwon Park (University of Nevada at Reno), Jungkwun Kim (University of North Texas)
Technical Group C-7	**Computer and Information Sciences (CIT)**	Chair: Ohbong J. Kwon (New York City College of Technology) Co-Chairs: Hoyoung Hwang (Hansung University), Donghoon Kim (Arkansas State University)
Technical Group C-8	**Industrial, Manufacturing, and Systems Engineering, Management Sciences, Operations Research (IMS)**	Chair: Jeong Hoon Choi (Youngstown State University) Co-Chairs: Tai-Woo Chang (Kyonggi University), Hyesung Park (Georgia Gwinnett College)
Technical Group D-1	**Social Sciences (Anthropology, Economics, Political Science, Sociology, Public Policy, etc.), Psychology, Digital Arts, STEM Education, and Other Sciences (SSP)**	Chair: Jongpil Cheon (Texas Tech University) Co-Chairs: Nicholas D. Hartlep (Berea College), Kyungbin Kwon (Indiana University – Bloomington), Gilbert Park (Ball state University)

Innovation and Entrepreneurship Symposium (IES) Group

Chair: IL Minn (Johns Hopkins University)

FIRE (Fostering Innovation in Rising Experts) Symposium

Chair: TJ (Tae Joong) Park (MIT)

Physics (PHY)
Technical Group A-1

Quantum science is rapidly gaining popularity in physics as well as among the general public. To address the rising interest in the subject, the Physics Symposium will feature special focus sessions on topics such as the history of quantum mechanics, its foundations, and the latest developments in the experimental and theoretical study of quantum systems. The symposium will also include a session devoted to promoting the work of junior physicists who have made significant contributions to their fields.

Chair

Harold D. Kim

Georgia Institute of Technology

Co-chairs

Chueng Ji

North Carolina State University

Soonwon Choi

Massachusetts Institute of Technology

Tech Group A-1
PHY

@ Carter

Aug 3 _ Thursday _ 4:00 – 6:00pm

PHY Session I: Quantum Mechanics and Beyond
Chair: Harold Kim (Georgia Tech), Soonwon Choi (MIT)

Time	Title and Speaker
4:00	**Spin Correlations and Bell's Inequality** // Chueng Ji (North Carolina State University)
4:24	**From Quantum Physics to Quantum Computing** // Alexander Kemper (North Carolina State University)
4:48	**DAMSA: A Novel Experiment Concept to Probe Dark Sector Particles** // Wooyoung Jang (University of Texas at Arlington)
5:12	**Investigation of Self-Assembled Water Chains in Biomolecular Interactions** // Byung Kim (Boise State University)

Tech Group A-1
PHY

@ Carter

Aug 4 _ Friday _ 4:00 – 6:00pm

PHY Session II: Quantum Materials
Chair: Chueng Ji (North Carolina State University), Harold Kim (Georgia Tech)

Time	Title and Speaker
4:00	**Manipulation of Quantum Materials** // Na Hyun Jo (University of Michigan)

Time	Title and Speaker
4:24	**Tunneling Andreev Reflection: Direct Access to the Superconductivity in the Atomic Resolution** // Wonhee Ko (University of Tennessee, Knoxville)
4:48	**Quantum Geometry for the Optical Properties of Crystals** Invited // Junyeong Ahn (Harvard University)
5:12	**Quantum Phases and Transitions under Decoherence: Many Body Physics of Information** // Jong Yeon Lee (Kavli Institute of Theoretical Physics)
5:36	**Toolbox for Analog Quantum Simulations** // Soonwon Choi (MIT)

Tech Group A-1
PHY

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

PHY Poster Session
Chair: Harold Kim (Georgia Tech), Chueng Ji (North Carolina State University), Soonwon Choi (MIT)

PHY P1	**Launching Multiple Modes in Hyperbolic vdW Heterostructures** // Byung-Il Noh (Auburn University)

Tech Group A-1
PHY

@ Carter

Aug 5 _ Saturday _ 8:00 – 10:00am

PHY Session III: Frontiers of Quantum Information Science and Technology
Chair: Soonwon Choi (MIT), Chueng Ji (North Carolina State University)

Time	Title and Speaker
8:00	**Research and Development of the Multi-qubit Superconducting Quantum Processor in SKKU** // Yonuk Chong (SungKyunKwan University)
8:20	**Magnetic-field-resilient Niobium Cavity Electromechanical System and its Optomechanical Frequency Comb Generation** // Junho Suh (Pohang University of Science and Technology)
8:40	**Deterministic Generation of Multidimensional Photonic Cluster States with a Single Quantum Emitter** Invited // Gihwan Kim (California Institute of Technology)
9:00	**Towards a Practical Quantum Advantage with a High-fidelity Rydberg Quantum Simulator** // Joonhee Choi (Stanford University)
9:20	**Scalable Fault-tolerant Quantum Error Correction with Linear Array of Emitters** // Isaac Kim (UC Davis)
9:40	**Fault-tolerant Quantum Computing with Bosonic Qubits** // Kyungjoo Noh (Amazon Web Services)

Chemistry (CHM)
Technical Group A-2

Chemistry has been crucial to understanding material's properties on the molecular level, and its impacts have been broadened to various applications of energy, new materials, biology, healthcare, and engineering. Thus, interdisciplinary research is becoming increasingly critical in addressing complex problems. This year's Chemistry Technical Group will organize symposia focused on the following research areas: (1) design and characterization of new materials and energy, and (2) molecular approaches for biology and healthcare. Leading researchers working at the forefront of these topics will be invited to discuss the structures and functions of molecular systems and noble experimental, theoretical, and computational techniques. Researchers, postdocs, and students working in academia, industry, and government laboratories are strongly encouraged to participate in scientific discussions and network building.

Chair

Jiwoong Park

University of Chicago

Co-chairs

Dong Hee Son

Texas A&M University

Hoi Sung Chung

National Institutes of Health

Tech Group A-2
CHM

@ Glasscock

Aug 3 _ Thursday _ 4:00 – 6:00pm

CHM Session I: Chemical Approaches for Biomedicine
Chair: Hoi Sung Chung (NIH), Dong Hee Son (Texas A&M University)

Time	Title and Speaker
4:00	**Towards Single Virus Genomics** Invited // Hee-Sun Han (University of Illinois, Urbana-Champagne)
4:20	**Nanotechnology Approaches for Real-time Neurotransmitter Detection in Stem Cell-Derived Neural Interfaces** Invited // Kibum Lee (Rutgers, The State University of New Jersey)
4:40	**Precision tumor cell death through targeting cancer-specific InDel mutations with CRISPR-Cas9** Invited // Taejoon Kwon (Ulsan National Institute of Science and Technology)
5:00	**Structure and mechanisms of DNA damage recognition and initiation in Nucleotide Excision Repair** Invited // Jung-Hyun Min (Baylor University)
5:20	**Transcription-Induced Active Forces Suppress Chromatin Motion by Inducing a Transient Disorder-To-Order Transition** Invited // Sucheol Shin (University of Texas at Austin)
5:40	**Single-molecule characterization of the early phase of amyloid-beta aggregation** Invited // Hoi Sung Chung (NIH)

Tech Group A-2
CHM

@ Glasscock

Aug 4 _ Friday _ 4:00 – 6:00pm

CHM Session II: Chemical Approached for Designed Materials
Chair: Jiwoong Park (U. Chicago), Young Jong Lee (NIST)

Time	Title and Speaker
4:00	**Silver Chalcogenide Infrared Colloidal Quantum Dots** Invited // Kwang Seob Jeong (Korea University)
4:20	**Nature-inspired synthetic polymers for customized biomedical applications** Invited // Soon Mi Lim (Texas A&M University)
4:40	**Photoemission of Upconverted Hot electrons from Doped Quantum Dots Effect of Charge and Ligand** Invited // Dong Hee Son (Texas A&M University)
4:55	**Infrared Sees Proteins in Water, Sensitively** Invited // Young Jong Lee (NIST)
5:10	**Introduction advanced environmental risk assessment for pesticide residues in environmental and AISS** // Hyosub Lee (Residual Agrochemical Assessment Division)
5:25	**New 2D with atomically thin crystals** Invited // Jiwoong Park (University of Chicago)
5:40	**Short oral presentations (each 7 min)** • **Vapor-Phase Anisotropic Polymer Particle Synthesis through Condensed Droplet Polymerization** // Kwang-Won Park (Cornell University) • **Iron-Gold Contacts: An Effective Linker for Ferrocene-Based Single-Molecule Electronics** // Woojung Lee (Columbia University) • **Generalized understanding of double layer for concentrated aqueous electrolytes and ionic liquids** // Suehyun Park (Georgia Institute of Technology)

Tech Group A-2
CHM

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

CHM Poster Session
Chair: Jiwoong Park (U. Chicago), Dong Hee Son (Texas A&M University), Hoi Sung Chung (NIH)

Time	Title and Speaker
CHM P1	**Vapor-Phase Anisotropic Polymer Particle Synthesis through Condensed Droplet Polymerization** // Kwang-Won Park (Cornell University)
CHM P2	**Iron-Gold Contacts: An Effective Linker for Ferrocene-Based Single-Molecule Electronics** // Woojung Lee (Columbia University)
CHM P3	**Generalized understanding of double layer for concentrated aqueous electrolytes and ionic liquids** // Suehyun Park (Georgia Institute of Technology)

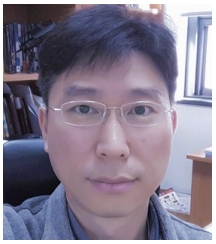
Mathematics, Applied Math and Statistics (MAS)
Technical Group A-3

The MAS (mathematics, applied math, and statistics) symposium invites enthusiastic researchers, scientists, and engineers to discuss the latest scientific and technical approaches. The symposium covers various aspects of all areas in mathematics, applied math and statistics including, but not limited to, classical theories in mathematics and statistics and practical applications inspired by real-world situations. The UKC 2023 MAS provides an opportunity for scientists and engineers to share their experiences and ideas on how different challenges we face can be turned into opportunities.

Chair

Young- Ju Lee
Texas State University

Co-chairs



Seungil Kim
Kyung Hee University

Jangwoon Lee
University of Mary Washington

Tech Group A-3
MAS

@ Hobby

Aug 3 _ Thursday _ 4:00 – 6:00pm

MAS Session I: Mathematical Theory and its Applications I
Chair: Seungil Kim (Kyunghee University)

Time	Title and Speaker
4:00	**GMsHDG method for nonlinear porous media** Invited // Minam Moon (Korea Military Academy)
4:20	**An efficient K-way constrained normalized cut and its connection to algebraic multigrid method** // Youngju Lee (Texas State University)
4:40	**The moduli space of holomorphic chains of rank one over a compact Riemann surface** // JingHyung To (Indiana University at Bloomington)
5:00	**Inference about differences in predictive skill between infectious disease forecasting models** // Dongah Kim (University of Massachusetts at Amherst)
5:20	**Exploring dynamics of HIV infections: an analysis of the Susceptible-Infected-Virus model in deterministic and stochastic forms** // Jangwoon Lee (University of Mary Washington)

Tech Group A-3
MAS

@ Hobby

Aug 4 _ Friday _ 4:00 – 6:00pm

MAS Session II: Mathematical Theory and its Applications II

Chair: Youngju Lee (Texas State University), Jangwoon Lee (University of Mary Washington)

Time	Title and Speaker
4:00	**Rigidity of steady solutions to the Navier-Stokes equations in high dimensions** Invited // Jeaheang Bang (University of Texas at San Antonio)
4:20	**Reconstruction of the shape and boundary condition in inverse scattering for an obstacle with partial generalized impedance boundary** // Heejin Lee (Purdue University)
5:00	**Bayesian clustering factor models** // Hwasoo Shin (Virginia Tech)
5:20	**Optimal rational approximation for the fractional diffusion problem** // Seungil Kim (Kyunghee University)
5:40	**Recent development of Bayesian joint modeling for medical sciences** // Seongho Song (University of Cincinnati)

Medical Science, Pharmaceutical Science, Veterinary Medicine, Physical Education (MPS) Technical Group B-1

This year, B-1 (previously MPS) will bring together life sciences and healthcare, and academic professionals on one stage to deliberate on cross-cutting-edge science. The world is changing to have a smart decision among the increased complexities of knowledge. We will deep dive into major three therapeutic areas such as oncology, immunology (including immuno-oncology), and neurology to focus on research and development. All speakers and poster presenters are from across the U.S. and Korea that can share their innovative research and solutions to each therapeutic issue.

Chair

Tae-Hyung Kim

University of New Mexico

Co-chairs

Jiyoung Lee

George Washington University

Hun-Goo Lee

Massachusetts General Hospital Harvard Medical School

Tech Group B-1
MPS

@ Dallas

Aug 3 _ Thursday _ 4:00 – 6:00pm

MPS Session I: Cancer and Metabolism
Chair: Jiyoung Lee (George Washington University)

Time	Title and Speaker
4:00	**Herbal Extracts from Lycii Radicis Cortex and Achyranthes Japonica Prevent Multiple Myeloma Progression** // Donghoon Yoon (University of Arkansas for Medical Sciences)
4:25	**High extracellular glucose promotes cell motility by modulating cell deformability and contractility via cAMP-RhoA-ROCK axis in human breast cancer cellsa** // Tae-Hyung Kim (University of New Mexico)
4:50	**Dysregulated 24-dehydrocholesterol reductase (DHCR24) in Head and Neck Squamous Cell Carcinoma** // Jiyoung Lee (George Washington University)
5:15	**Metabolic Vulnerabilities of Squamous Cell Carcinomas** Invited // Jungwhan Kim (University of Oklahoma Health Science Center)
5:45	**Poster Presentation Flash Talks (3 min each)** • **Expression and Characterization of MYO7A Isoforms Localized to the Stereocilia Upper Tip-link Density** // Jinho Park (University of Florida) • **Slow Myosin Binding Protein-C and Congenital Muscle Disease** // Taejeong Song (University of Cincinnati Medical School)

Tech Group B-1
MPS

@ Dallas

Aug 4 _ Friday _ 4:00 – 6:00pm

MPS Session II: Neurobiology, Immunology, and Beyond
Chair: Hungoo Lee (MGH/Harvard)

Time	Title and Speaker
4:00	**Poster Presentation Flash Talks (3 min each)** • **Augmented Reality Glasses for Enhancing Coaching Abilities of Exercise Instructors** // Jeeyoung Hong (Kongju National University) • **Associations between Binge Eating Severity and Factors from Social Comparison among Korean American women** // Bo Ra Kim (University of Texas at Austin) • **Sigma Anti-Bonding Calcium Carbonate (SAC) cream enhances the wound-healing process in C57/BL6 mouse** // Yeonju Kang (University of Arkansas) • **Sigma Anti-Bonding Calcium Carbonate (SAC) and Biofilm Promote Wound Healing in B6.Cg-Lepob/J (ob/ob) Mouse** // Hyejeong Jeong (University of Arkansas)
4:30	**Sex difference in the profile of extracellular bioactive lipids of conjunctival epithelial cells during allergic inflammation** // Changrim Lee (Harvard Medical School)
5:00	**Modulating the Host's Immune Response for Preventing Peri-implantitis in Mice** // Yejin Ki (University of Pittsburgh School of Dental Medicine)
5:30	**Ets-1 as a Negative Regulator of Peripherally Induced Regulatory T Cells and its implications in autoimmune diseases** // Choong-Gu Lee (Korea Institute of Science and Technology (KIST)
6:00	**Removing the root cause of Fragile X syndrome by Inducing the contraction of CGG repeats and FMR1 restoration** // Hungoo Lee (MGH/ Harvard)

Tech Group B-1
MPS

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

MPS Poster Session
Chair: Tae-Hyung Kim (University of New Mexico)

Time	Title and Speaker
MPS P1	**Augmented Reality Glasses for Enhancing Coaching Abilities of Exercise Instructors** // Jeeyoung Hong (Kongju National University)
MPS P2	**Associations between Binge Eating Severity and Factors from Social Comparison among Korean American women** // Bo Ra Kim (The University of Texas at Austin School of Nursing)
MPS P3	**Slow Myosin Binding Protein-C and Congenital Muscle Disease** // Taejeong Song (University of Cincinnati Medical School)

Tech Group B-1
MPS

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

MPS Poster Session

Chair: Tae-Hyung Kim (University of New Mexico)

Time	Title and Speaker
MPS P4	**Expression and Characterization of MYO7A Isoforms Localized to the Stereocilia Upper Tip-link Density** // Jinho Park (University of Florida)
MPS P5	**Sex Differences in Amino Acid Kinetics in Older Adults with Chronic Morbidities** // Chloe Kang (Texas A&M University Center for Translational Research in Aging & Longevity)
MPS P6	**Sigma Anti-Bonding Calcium Carbonate (SAC) cream enhances the wound-healing process in C57/BL6 mouse** // Yeonju Kang (University of Arkansas for Medical Sciences)
MPS P7	**Development of Humanized Diffuse large B-cell Lymphoma Mouse Models** // Hyejeong Jeong (University of Arkansas for Medical Sciences)
MPS P8	**Multiple Sclerosis Research Across the African Continent: A Systematic Review** // Soonmyung Hwang (Icahn School of Medicine at Mount Sinai)

Tech Group B-1
MPS

@ Dallas

Aug 5 _ Saturday _ 8:00 – 10:00am

MPS Session III: Public Health and Technology

Chair: Soojin Yoo (University of Texas Rio Grande Valley), Co-Chair: Jiyoung Lee (George Washington University)

Time	Title and Speaker
8:00	**Multi-Omics Profiling for Evaluating Carcinogenic Exposure and Health Effects in Firefighters during Emergency Fires** Invited // Jooyeon Hwang (University of Texas Health Sciences Center at Houston)
8:25	**Bridging the Gap: A Community Approach to Addressing Health Disparities in North Nashville through Food Access Community Mapping** // Wansoo Im (Meharry Medical College)
8:50	**Differential Moderating Roles of the Salience Network and Central Executive Network in Internalizing Psychopathology and Fluctuating Negative Affect** // Ha Jeong Park (Texas A&M University Department of Psychological and Brain Sciences)
9:15	**Clinical and Environmental Effects of Healthy Home Interventions** // Insung Kang (Illinois Institute of Technology)
9:40	**Mutations in the UBIAD1 gene, the vitamin K2 synthesizing enzyme, cause Schnyder Corneal Dystrophy (SCD) by inhibiting ER-associated degradation of HMG CoA reductase** // Dong-Jae Jun (UT Southwestern Medical Center)

Agriculture, Ecology, Food, Nutrition (FAN)
Technical Group B-2

Agriculture, Ecology, Food, and Nutrition Symposium will provide professional opportunities for leading and rising scientists and engineers to learn latest scientific, technical advances in various fields of agriculture, ecology, food and nutrition in US and Korea. The symposium covers all areas related to the UKC 2023's topic, '*Discovery, Innovation and dissemination for transformative impact*'. Areas include:

1. Agricultures including agronomy, entomology, crop, soil science, & environmental science, horticulture, plant science, plant pathology, animal sciences, agricultural biotechnology & engineering, agricultural economics & agribusiness, and other agricultural areas
2. Ecology including physiological ecology & behavioral ecology, population ecology, community ecology, ecosystem, landscape, human ecology, and other ecological areas
3. Food science including functional food, food processing, food quality, safety and regulation, food nanotechnology, food microbiology, food chemistry, food engineering, sensory science, and other emerging food technologies
4. Nutrition including dietetics, nutrient metabolism and physiology, precision nutrition, nutritional management in human diseases including obesity, diabetes, cancer, and stroke, muscle and protein metabolism, gene and diet interactions, international nutrition, nutrition and intestinal microbiome.

Chair

Yoo Kim

Oklahoma State University

Co-chairs

Sungeun Cho

Auburn University

Kee Hong Kim

Purdue University

Tech Group B-2
FAN

@ Jonsson

Aug 3 _ Thursday _ 4:00 – 6:00pm

FAN Session I: Food Science and Technology
Chair: Sungeun Cho (Auburn University), Yoo Kim (Oklahoma State University)

Time	Title and Speaker
4:00	**Metabolomics in food and agricultural science** Invited // Joonhyuk Suh (University of Georgia)
4:20	**New antioxidants for frying oil developed in NCAUR, ARS, USDA** // Hong-sik Hwang (USDA, ARS, NCAUR)
4:40	**R&D Direction for Plant-based Meat and Cultivated Meat: Critical Variables for Consumer's Sensory Acceptance** // Jung Han (Eat Just)
5:00	**Comparative Study of the Susceptibility to Blue Light Inactivation of Foodborne Pathogens and Spoilage Bacteria** // Minji Hur (University of Georgia)

Tech Group B-2
FAN

@ Jonsson

Aug 3 _ Thursday _ 4:00 – 6:00pm

FAN Session I: Food Science and Technology

Chair: Sungeun Cho (Auburn University), Yoo Kim (Oklahoma State University)

Time	Title and Speaker
5:20	**Pathway-based metabolomics reveals the biosynthesis of key flavor compounds in apple** // Min Jeong Kang (University of Georgia)
5:40	**Influence of stunning methods on sensory characteristics of chicken breast meat using electronic senses** // Sungeun Cho (Auburn University)

Tech Group B-2
FAN

@ Jonsson

Aug 4 _ Friday _ 4:00 – 6:00pm

FAN Session II: Nutrigenomics

Chair: Kee Hong Kim (Purdue University), Yoo Kim (Oklahoma State University)

Time	Title and Speaker
4:00	**Advancing Sustainable Food Production Through Synthetic Biology** // Eun Joong Oh (Purdue University)
4:30	**Dietary Curcumin Attenuates Hepatic Cellular Senescence by Suppressing MAPK/NF-κB Signaling Pathway in Aged Mice** // Da-Yeon Lee (Oklahoma State University)
4:50	**Systems Genetic Analysis of Atherosclerosis and Gut Microbiota in a Diet-induced Hyperlipidemic Diversity Outbred F1 Mouse Population** // Myungsuk Kim (Korea Institute of Science and Technology)
5:15	**New insights into the role of piceatannol in cancer-associated cachexia** // Kee-Hong Kim (Purdue University)
5:40	**Protective Effects of Dietary Curcumin on Type 3 Diabetes** // Yoo Kim (Oklahoma State University)

Tech Group B-2
FAN

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

FAN Poster Session

Chair: Keehong Kim (Purdue University), Yoo Kim (Oklahoma State University)

Time	Title and Speaker
FAN P1	**Development of a method for risk assessment of organic pollutant exposure using monitoring data in the agricultural sector** // Sangik Suh (Geongsang National University)
FAN P2	**Autonomous Stand Counting in Field Pea using Aerial Imagery** // Jeong-Hwa Kim (North Dakota State University)
FAN P3	**Effects of Berry Volatile Extracts on LPS-induced Intestinal Inflammaation in a Caco-2/RAW264.7 Co-culture Model** // Sun-Ok Lee (University of Arkansas)
FAN P4	**System Dynamics Model for Autonomous and Controlled Environment Potato Production System** // Jae Hyeon Ryu (University of Idaho)

Biological and Biomedical Sciences (Biology, Molecular Biology, Cognitive Science, Botany, Zoology, Biomechanics, etc.) / Bioengineering and Biomedical Engineering (BME) Technical Group B-3 / C-1

As in any other major industry, problem solving in modern medicine increasingly requires a true convergence of many scientific and engineering fields. While some of the last frontiers of biomedicine, such as neuroscience and regenerative medicine, critically demands new ideas and tools from other disciplines, paradigm-shifting technological innovations in information science, nanotechnology, and robotics could open new opportunities in healthcare. At the same time, a new generation of engineers, "*fluent*" in many different languages of science, are creating entirely new fields to view the old questions with a fresh look. In the BME symposium, we strive to provide a stimulating forum for all researchers willing to go beyond the "*comfort zone*" to explore new opportunities in biomedical engineering.

Chair

Hyunjoon Kong

University of Illinois at Urbana-Champaign

Co-chairs

Deok Ho Kim

Johns Hopkins University

Young Bin Choy

Seoul National University

Tech Group B-3/C-1 BME

@ Maverick

Aug 3 _ Thursday _ 4:00 – 6:00pm

BME Session I: AI & Big Data Applications in Biomedicine

Chair: YoungBin Choy (Seoul National University), Co-Chair: Juhun Lee (University of Pittsburgh)

Time	Title and Speaker
4:00	**Progress and Trends in Artificial Intelligence for Colonoscopy** Invited // Dongheon Lee (Chungnam National University)
4:17	**Multimodal Interfaces for Immersive Virtual Reality** // Jinryong Kim (University of Texas at Dallas)
4:34	**Image-based Deep Survival Learning Model for Risk Stratification of Cardiovascular Disease using Retinal Fundus Image** // Jooyoung Chang (R&D, XAIMED)
4:51	**Machine Learning of Colors for mHealth Applications** // Young L. Kim (Purdue University)
5:08	**Assessing the generalization of graph neural networks** // Kijung Yoon (Hanyang University)

Tech Group
B-3/C-1 BME

@ Maverick

Aug 3 _ Thursday _ 4:00 – 6:00pm

BME Session I: AI & Big Data Applications in Biomedicine

Chair: YoungBin Choy (Seoul National University), Co-Chair: Juhun Lee (University of Pittsburgh)

Time	Title and Speaker
5:25	**Isotropic cellular resolution across centimeter field of view using subvoxel axially sweeping light sheet microscopy (SV-ASLSM)** // Juhyun lee (University of Texas at Arlington)
5:43	**Analysis of GAN Artifacts in Breast Screening Mammogram Simulation** // Juhun Lee (University of Pittsburgh)

Tech Group
B-3/C-1 BME

@ Maverick

Aug 4 _ Friday _ 4:00 – 6:00pm

BME Session II: Biomedical Devices and Materials for Biosensing, Diagnostics, and Therapeutics

Chair: Youngjae Chun (University of Pittsburgh), Co-Chair: Jaeseok Yu (DGIST)

Time	Title and Speaker
4:00	**Ultra-sensitive Silicon Photonic Opto-mechanical Ultrasound Sensor for Biomedical Photoacoustic Imaging: Proof-of-concept study** Invited // Jaeseok Yu (DGIST)
4:20	**Smart Contact Lenses for Glaucoma Care** // Chi Hwan Lee (Purdue University)
4:40	**Microbead-based Biomaterials for Cellular Immunotherapy** // Kyung-Ho Roh (University of Alabama, Huntsville)
5:00	**In vivo evaluation of fractal microelectrodes for Vagus nerve stimulation** // Hugh Lee (Purdue University)
5:20	**Advanced Cell and Gene Therapies For Effective CNS Repair Using Bionanomaterials** // Ki-Bum Lee (Rutgers University)
5:40	**Development of Novel Ultra-low Profile Coronary Stents to Treat Potential In-Stent Restenosis** // Youngjae Chun (University of Pittsburgh)

Tech Group
B-3/C-1 BME

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

BME Session III: Biomedical Engineering Poster Session

Chair: Chi Hwan Lee (Purdue University), Co-Chair: Kyung Ho Roh (University of Alabama, Huntsville)

Time	Title and Speaker
BME P1	**A Homozygous IER3IP1 Mutation Causes Secretory Protein Trafficking Defects in Neural Progenitor Cells** // Lucie Yeongran Ahn (Case Western Reserve University)

Tech Group
B-3/C-1 BME

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

BME Session III: Biomedical Engineering Poster Session
Chair: Chi Hwan Lee (Purdue University), Co-Chair: Kyung Ho Roh (University of Alabama, Huntsville)

Time	Title and Speaker
BME P2	**Osteoporosis Drug Testing on Demineralized Bone Paper** // Yongkuk Park (University of Massachusetts Amherst)
BME P3	**Spatial Phenotyping of the Glioblastoma Tumor Microenvironment** // Jungmin Nam (Yale University)
BME P4	**Production of animal stealth red cells by cell surface modulation** // Hyung Kyu Kim (Kyungpook National University)
BME P5	**A Pillar and Perfusion Plate Platform for Robust Human Organoid Culture and Analysis** // Soo-Yeon Kang (University of North Texas)
BME P6	**Studying depressive disorders with a 3D neurosphere model on a micropillar chip** // NaYoung Choi (Inje University)
BME P7	**Estimation of Musculotendon Stiffness and Slack Length Using an Optimization Algorithm** // Hwan Choi (University of Central Florida)
BME P8	**Frequency Analysis on Tissue Perfusion using a Laser Speckle Contrast Imaging in vivo** // Yungjun Yoo (Optosurgical, LLC)
BME P9	**Fundamental Issues in Cognitive Workload Classification** // Junho Park (Texas A&M University)
BME P10	**Integrated Edge-AI Based Closed-loop Stimulation System for Gait Rehabilitation after Spinal Cord Injury** // Ahnsei Shon (Texas A&M University)
BME P11	**Characterization of Decellularized Plant Leaf Biomaterials for Tissue Engineering** // Chanul Kim (University of Wisconsin–Madison)
BME P12	**Development of Nanoparticle Inducing Device Through ML** // Gawon Lim (University of Illinois, Urbana-Champaign)
BME P13	**Modulating the corticospinal excitability using various non-invasive brain stimulation techniques** // Hakjoo Kim (Texas A&M University)
BME P14	**Organic Synthesis Reactions on Digital Microfluidic Device** // Hyejin Moon (University of Texas at Arlington)
BME P15	**Trans-Golgi protein TVP23B regulates host-microbe interactions via Paneth cell homeostasis and Goblet cell glycosylation** // Ran Song (University of Texas Southwestern Medical Center)
BME P16	**Effects of collagen fiber alignments in regulating osteoblasts and mineralization** // Hyejin Yoon (University of Massachusetts, Amherst)

Tech Group
B-3/C-1 BME

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

BME Session III: Biomedical Engineering Poster Session

Chair: Chi Hwan Lee (Purdue University), Co-Chair: Kyung Ho Roh (University of Alabama, Huntsville)

Time	Title and Speaker
BME P17	**Blood compatibility assessment of biomaterial surface chemistries to mitigate intrinsic coagulation pathway activation** // Kyung-Hoon Kim (University of Washington)
BME P18	**[SEED2023] Ectopic high endothelial venule-targeted nanodelivery for type 1 diabetes** // Sungwook Jung (Harvard Medical School)
BME P19	**[SEED2023] A Microengineered Organoid-on-a-Chip Model of Alveolar Development in the Human Lung Sunghee** // Estelle Park (University of Pennsylvania)
BME P20	**Injectable Lignin Composites to Improve Neovascularization and Healing of Diabetic Wounds** // Jangwook P. Jung (Louisiana State University)
BME P21	**Sex difference in the profile of extracellular bioactive lipids of conjunctival epithelial cells during allergic inflammation** // Changrim Lee (Harvard Medical School)
BME P22	**Creating a Therapeutic Application Plan through Research on Rare Genetic Disorders** // Bokyeong Song (Sookmyung Women's University)
BME P23	**The Intervention of the Beta Amyloid Protein Dysfunction by Carbon Nanodots in Alzheimer's Disease** // John Bang (North Carolina Central University)
BME P24	**Particulate Matter (PM) induced Beta Amyloid (BA) Protein Aggregation** // Kevin Omar (North Carolina Central University)
BME P25	**Polystyrene Microplastics and their GI Transmembrane Passage Capacity in Zebrafish Embryos** // Majemite Iyangbe (North Carolina Central University)
BME P26	**Analysis of Clock-Controlled Genes (CCGs) in Human Intestinal Enteroids** // Suengwon Lee (University of Cincinnati)
BME P27	**Toward Hyperplexed Immunohistochemistry using Hydrogel Staining, Chiral Nanoparticles, and Nanobodies** // Kyung-Hak Choi (Noul Co., Ltd)
BME P28	**An AI-embedded and Fully Automated Device for Malaria Detection at Remote Setting** // Kyung-Hak Choi (Noul Co., Ltd.)
BME P29	**Structural and biochemical characterization of the thiol methyltransferase 1A and 1B** // Taeyoon Jung (University of Washington)
BME P30	**Numerical and Computational Analysis of Vascular Phantom Model for Sensor Design Validation** // Youngjae Chun (University of Pittsburgh)

Tech Group
B-3/C-1 BME

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

BME Session III: Biomedical Engineering Poster Session

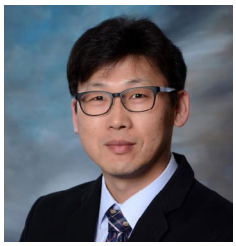
Chair: Chi Hwan Lee (Purdue University), Co-Chair: Kyung Ho Roh (University of Alabama, Huntsville)

Time	Title and Speaker
BME P31	**Scalable manufacturing of skin-conformal, stretchable electrodes via screen-printing** // Jong-Hoon Kim (Washington State University)
BME P32	**Multi-responsive injectable ECM-based embolic delivering therapeutic agents for treating cerebral saccular aneurysms** // Seungil Kim (University of Pittsburgh)
BME P33	**Co-transcriptional folding of nascent RNA in the presence of RNA-binding** // Sunghyun Cho (Johns Hopkins University)
BME P34	**Towards Robotic Knee Prosthesis Personalization: Impedance Control With PCA-Based Tuning Methodology** // Woolim Hong (North Carolina State University)
BME P35	**Skin-interfaced wireless device for fetal and maternal monitoring to minimize unnecessary C-section** // Hyoyoung Jeong (University of California Davis)
BME P36	**Genome-wide epigenetic editing of human microsatellite repeats using engineered zinc finger transcription factors** // Y. Esther Tak (Harvard Medical School)
BME P37	**Intelligent Upper-limb Exoskeleton using Deep Learning to predict Human Intention for Sensory-Feedback Augmentation** // Kangkyu Kwon (Georgia Institute of Technology)
BME P38	**[SEED2023] Engineered Helicase Replaces Thermocycler in DNA Amplification While Retaining Desired PCR Characteristics** // Jimin Kang (Johns Hopkins University)
BME P39	**Noninvasive estimation of intracranial pressure via diffuse correlation spectroscopy** // John Sunwoo (Massachusetts General Hospital, Harvard Medical School)

Chemical, Textile, Energy, and Nuclear Engineering (CHE)
Technical Group C-2

This symposium provides a forum for leading experts and young researchers to present and discuss cutting-edge research advances in the broad areas of chemical engineering and related fields. Topics of interest include various aspects of such areas including (but not limited to) advanced nanomaterials/biomaterials, nanoscience/nanotechnology, and complex processes for energy, health, and environmental problems. Both experimental and computational approaches as well as synergistic methods to address grand challenges in aforementioned topics are welcome.

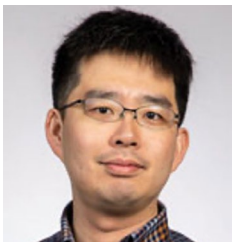
Chair



Hyun-Tae Hwang

University of Kentucky

Co-chair



Jaewon Lee

University of Missouri

Tech Group C-2
CHE

@ McKee

Aug 3 _ Thursday _ 4:00 – 6:00pm

CHE Session I: Chemical, Textile, Energy, and Nuclear Engineering

Chair: Hyun-Tae Hwang (University of Kentucky), Jaewon Lee (University of Missouri-Columbia)

Time	Title and Speaker
4:00	**Next-Generation Hybrid Models: Combining Attention Mechanisms and LSTM for Improved Predictions and Process Control in the Chemical Industry** Invited // Joseph Kwon (Texas A&M University)
4:30	**CO_2 EOR and Carbon Capture Utilization and Storage (CCUS): Field-Scale Application of Mobility-Control CO_2 Foams** // Seung Ihl Kam (Louisiana State University)
5:00	**Valorization of Nutrients in Surface Waters Through the Sustainable Biomass Production of the Attached Algae Flow-way for Biofuels** // Sungwhan Kim (Sandia National Laboratories)
5:30	**Solid-State Hydrolysis of Sodium Borohydride for Hydrogen Generation** // Hyun-Tae Hwang (University of Kentucky)

Tech Group C-2
CHE

@ McKee

Aug 4 _ Friday _ 4:00 – 6:00pm

CHE Session II: Chemical, Textile, Energy, and Nuclear Engineering

Chair: Hyun-Tae Hwang (University of Kentucky), Jaewon Lee (University of Missouri-Columbia)

Time	Title and Speaker
4:00	**Facile Soft-lithographic Micromolding Approaches for Controlled Fabrication of Micropatterned Opal Hydrogel Materials** Invited // Hyunmin Yi (Tufts University)
4:30	**Real-time investigation of Nanoparticle Self-assembly mechanisms and its controlling factors** // Jaewon Lee (University of Missouri-Columbia)
5:00	**Disordered Cathode Materials for High-Energy Lithium-Ion Batteries** // Juhyeon Ahn (Lawrence Berkeley National Laboratory)

Tech Group C-2
CHE

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

CHEPoster Session

Chair: Hyun-Tae Hwang (University of Kentucky), Jaewon Lee (University of Missouri-Columbia)

Time	Title and Speaker
CHE P1	**Spreading and wetting of transiently-crosslinked polymer spheres** // Kyujin Ko (University of Cincinnati)

Mechanical, Aerospace, and Naval Engineering (MAN)
Technical Group C-3

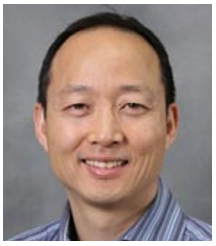
The Mechanical, Aerospace, and Naval Engineering (MAN) Symposium covers a wide variety of related areas including energy, manufacturing, mechanics, control, robotics, materials and so on. Experimental, theoretical, and computational studies are all welcome to the MAN symposium. The MAN symposium facilitates communication and collaboration on cutting-edge research in mechanical, aerospace, and naval engineering.

Chair

Eon Soo Lee

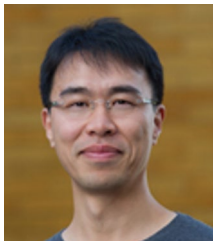
New Jersey Institute of Technology

Co-chairs



Martin Byung-Guk Jun

Purdue University



W. Jong Yoon

University of Washington Bothell

Tech Group C-3
MAN

@ Houston

Aug 3 _ Thursday _ 4:00 – 6:00pm

MAN Session I: MAKER-Manufacturing Alliance of Korean Engineers and Researchers
Chair: Martin Jun (Purdue University), Eon Soo Lee (New Jersey Institute of Technology)

Time	Title and Speaker
4:00	**Practical and Economical Additive Manufacturing for High Temperature Applications** Invited // Haseung Chung (Michigan State University)
4:20	**Via Metrology and Inspection for Advanced Electronics Packaging** // Chabum Lee (Texas A&M University)
4:35	**Advanced Manufacturing Techniques for Flexible and Wearable Devices** // Chi Hwan Lee (Purdue University)
4:50	**A Novel Approach of Mold-free Manufacturing for Highly Sensitive Pressure and Tactile Sensors** // Sunghwan Lee (Purdue University)
5:05	**Additive Manufacturing of Rubber** // Jae-Won Choi (University of Akron)
5:20	**Cutting Mechanisms of Cross-ply Carbon Fabrics using a Drag Cutter** // Dae-Wook (Dave) Kim (Washington State University)
5:35	**3D Printed Microchannel-based Blood Plasma Self-separation for Biomedical Applications** // Eon Soo Lee (New Jersey Institute of Technology)
5:50	**Sound Recognition Using MT Connect Framework for Real-time Cutting Condition Monitoring of CNC Milling Machine** // Martin Byung-Guk Jun (Purdue University)

Tech Group C-3
MAN

@ Houston

Aug 4 _ Friday _ 4:00 – 6:00pm

MAN Session II: Future Technologies in Materials and Engineering

Chair: Woon Jong Yoon (University of Washington Bothell), Eon Soo Lee (New Jersey Institute of Technology)

Time	Title and Speaker
4:00	**A Study on the Development of Terrain Following Simulator using Digital Terrain Elevation Data (DTED)** Invited // Sangchul Lee (Korea Aerospace University)
4:20	**Decarbonization Effort in Non-Road Heavy-Duty Equipment** // Youngjin Son (Caterpillar Inc.)
4:35	**High Performance Green Composites Made with Cellulose Long Filament and Vanillin Epoxy** // Jaehwan Kim (Inha University)
4:50	**Morphology Control of Inkjet-Printed Micro-Patterns for Printed Electronics** // Jun Young Hwang (Korea Institute of Industrial Technology)
5:05	**Multifunctional Mechano-Luminescence-Optoelectronic Composites for Non-Invasive and Self-Learning Health Monitoring Wearables** // Donghyeon Ryu (New Mexico Tech)
5:20	**Cells Function as Ternary Logic Gates to Decide Their Migration Direction Under Combined Chemical and Fluidic Cues** // Bumsoo Han (Purdue University)
5:35	**Development of Gamifying Robots for Improving Stroke Recovery and Cross-disciplinary Undergraduate Research Experience** // Woon Jong Yoon (University of Washington Bothell)

Tech Group C-3
MAN

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

MAN Poster Session

Chair: Martin Jun (Purdue University), Woon Jong Yoon (University of Washington Bothell)

Time	Title and Speaker
MAN P1	**CNN-based Vibration Signal Classification through Image Conversion of Feature Matrix** // Tae Hong Min (Gyeongsang National University)
MAN P2	**Optimal Design Process of Variable Geometry Turbocharger Turbine Impeller** // Jeong-Eui Yun (Kangwon National University)
MAN P3	**Thermal Control in Metal Additive Manufacturing** // Jihoon Jeong (Northwestern University)
MAN P4	**Development of Rule-based Automatic Diagnosis Technology for Motor Pump System Diagnosis** // DeokYeong Cheong (Gyeongsang National University)

Tech Group C-3
MAN

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

MAN Poster Session

Chair: Martin Jun (Purdue University), Woon Jong Yoon (University of Washington Bothell)

Time	Title and Speaker
MAN P5	**Electrified Personal Tracked Vehicle for Automation** // Santiago Ricoy (University of Nevada, Las Vegas)
MAN P6	**Optimization of Direct Energy Deposition Additive Manufacturing Process for Al-Mg-Si Alloy and H13 Steel** // Jeki Jung (Stevens Institute of Technology)
MAN P7	**Towards Embodiment of Miniature Humanoid through Virtual Reality** // Akshay Dave (University of Nevada, Las Vegas)
MAN P8	**Trajectory Planning for a Cable Driven Parallel Robot** // Zahir Castrejon (University of Nevada, Las Vegas)
MAN P9	**Crack Morphologies during Ultra-Precision Machining of Single Crystal 8 %mol Yttria-stabilized Zirconia** // Dae Nyoung Kim (University of Wisconsin - Madison)
MAN P10	**Method for Real-Time Joint Trajectory in Telepresence Avatar Robotics** // Baekseok Kim (University of Nevada, Las Vegas)
MAN P11	**Contact Guidance of Hs27 Fibroblasts** // Chunghwan Kim (Arizona State University)
MAN P12	**Animated Graphene-filled Glass Fiber Composites for Enhanced Mechanical Properties** // Ning Bian (University of Texas at Dallas)
MAN P13	**Path planning problem for Self-Rechargeable Unmanned Aerial-Ground Vehicle Group** // Jackie Lee (Texas A&M University)
MAN P14	**Waveguided-based Darkfield Microscopy for Wafer Edge Inspection** // Heebum Chun (Texas A&M University)
MAN P15	**Parametric Machine Learning Model for Laser Powder Bed Fusion** //Jong Kim (University of Central Florida)
MAN P16	**Static Analysis of a Carbon Fiber Rotor in an Axial Flux motor** // Joon Jo (Texas A&M University)
MAN P17	**CNN-based Condition Classification of Vibration Signal Considering Fault Location** // Jeongjun Lee (Gyeongsang National University)
MAN P18	**A Novel Approach to Mosquito Trap: Utilizing 3D Flight Tracking Technology** // Soohwan Kim (Georgia Institute of Technology)

Materials Science and Engineering, Nanotechnology (MSE)
Technical Group C-4

Materials innovation is at the heart of addressing critical societal challenges related with energy, environment, and sustainability. Materials Science and Engineering (MSE) symposium will bring together scientists and engineers working at the forefront of materials science and technologies, providing opportunities for gaining new perspectives and networking for future collaborations. The topics to be covered by the symposium include but are not limited to: Electronic materials; functional materials; and nanomaterials towards advanced applications such as micro/nanoelectronics, energy conversion/storage, and additive manufacturing to name a few. Also to be discussed are novel materials design, synthesis, processing, and characterization.

Chair

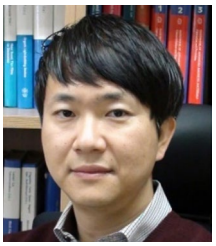
Jiyoung Kim

University of Texas at Dallas

Co-chairs

Chang-Yong Nam

Brookhaven National Laboratory



Jang-Sik Lee

Pohang University of Science and Technology(POSTECH)

Tech Group C-4 MSE

@ Fort Worth

Aug 3 _ Thursday _ 4:00 – 6:00pm

MSE Session I: Material Synthesis—Electrochemistry and Microelectronics Applications
Chair: Jiyoung Kim (University of Texas at Dallas), Chang-Yong Nam (Brookhaven National Laboratory)

Time	Title and Speaker
4:00	**Electrochemistry of Metals with High Oxidation Potential** Invited // Choong-Un Kim (University of Texas at Arlington)
4:20	**Fabrication of Fe-Ni Invar Alloy using Electrodeposition Technology for FMM Application** Invited // Jae-Ho Lee (Hongik University)
4:40	**3-Dimensional Integration with High Interconnection Density** Invited // Rino Choi (Inha University)
5:00	**Electrochemical Stability of Real-Scale Metallic Nanoparticles explored by Machine Learning** Invited // Hyuck Mo Lee (Korea Advanced Institute of Science and Technology)
5:20	**Electrochemical synthesis of single crystalline nanomaterials and applications to interconnect of electronic packaging** Invited // Jae Yong Song (Pohang University of Science and Technology)
5:40	**Phase-field Simulation of Microstructure Formation in Thin Films** Invited // Yongwoo Kwon (Hongik University)

Tech Group C-4
MSE

@ Fort Worth

Aug 4 _ Friday _ 4:00 – 6:00pm

MSE Session II: Next-Generation Electronic Devices and Materials

Chair: Jang-Sik Lee (Pohang University of Science and Technology), Chang-Yong Nam (Brookhaven National Laboratory)

Time	Title and Speaker
4:00	**Technology Trends of 3D NAND Flash Memory and Pathfinding Opportunities** Invited // Tae Kyung Kim (Samsung Electronics)
4:20	**Highly-Scaled 3D Ferroelectric Transistor Array for Compute-in-Memory** Invited // Jang-Sik Lee (Pohang University of Science and Technology)
4:40	**Half-Cycle Interrogation of HfO2 Atomic Layer Deposition Mechanism Using in-situ Reflectance Absorbance Infra-Red Spectroscopy** Invited // Jiyoung Kim (University of Texas at Dallas)
5:00	**Dopant Control of Ultra-short Channel Gate-All-Around FET for Reliable Threshold Voltage** Invited // Rock Hyun Baek (Pohang University of Science and Technology)
5:20	**New Device Applications of III-Nitride Wide-Bandgap Semiconductors: Beyond Power Electronics and Visible/UV Photonics** Invited // Jae-Hyun Ryou (University of Houston)
5:40	**High Resolution Photolithography for OLED Frontplane** Invited // Jeong-Hwan Lee (Inha University)
6:00	**Vapor-Phase Infiltration for Microelectronics Applications** Invited // Chang-Yong Nam (Brookhaven National Laboratory)

Tech Group C-4
MSE

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

MSE Poster Session

Chair: Jiyoung Kim (University of Texas at Dallas), Chang-Yong Nam (Brookhaven National Laboratory), Jang-Sik Lee (Pohang University of Science and Technology)

Time	Title and Speaker
MSE P1	**Charge Transfer Across the Interfaces in Organic Field-Effect Transistors** // Hyun Ho Choi (Gyeongsang National University)
MSE P2	**Free-Standing $Li_4Ti_5O_{12}$/Carbon Nanotube Electrodes for Flexible Lithium-Ion Batteries** // Jun seok Lee (Gyeongsang National University)
MSE P3	**The Effects of in-situ Atomic Layer Annealing on Thermal Atomic Layer Deposited Silicon Nitride** // Siun Song (The University of Texas at Dallas)
MSE P4	**Analysis of Separation Behavior of Polyamide Structure-Based RO membrane Using Multi-scale Simulation** // Kwangseop Im (Gyeongsang National University)

Tech Group C-4
MSE

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

MSE Poster Session

Chair: Jiyoung Kim (University of Texas at Dallas), Chang-Yong Nam (Brookhaven National Laboratory), Jang-Sik Lee (Pohang University of Science and Technology)

Time	Title and Speaker
MSE P5	**Optimal Print Parameter Prediction By Neural Networks For Laser Powder Bed Fusion Additive Manufacturing** // Kevin Graydon (University of Central Florida)
MSE P6	**Enhanced ferroelectric polarization of $Hf_{0.5}Zr_{0.5}O_2$ thin films through fast ramp-up annealing process** // Seongbin Park (Kangwon National University)
MSE P7	**Forming Voltage-Free Memristive Hafnium Oxide Devices for Non-Polar Switching Applications** // Yeeun Hong (University of Texas at Dallas)
MSE P8	**Characterizing the High Temperature Mechanical Performance and Microstructure of Additively Manufactured Tantalum** // Sharon Park (Johns Hopkins University)
MSE P9	**Determining Printability of Soft Magnetic Alloys Via Single Track Study** // Nicolas Ayers (University of Central Florida)
MSE P10	**Development and evaluation of diaphragm membrane for alkaline water electrolysis** // Sang Yong Nam (Gyeongsang National University)
MSE P11	**Manufacturing of Inconel 718 with Enhanced Boron Composition via Selective Laser Melting** // Jeongwoo Lee (University of Texas Rio Grande Valley)
MSE P12	**Evaluation of Interfacial Property and Damage Sensing of Structural Composites Using Electrical Resistance Method** // Dong-Jun Kwon (Gyeongsang National University)
MSE P13	**Fabrication and Electrical Properties of Organic Ferroelectric Gate Transistors** // Byung Eun Park (University of Seoul)
MSE P14	**Electrochemical Removal of Nitrate for Ammonia Synthesis and Water** // Jeonghoon Lim (Lawrence Berkeley National Laboratory)
MSE P15	**The Effect of H-bonding Strength on the Water-responsiveness of Bacillus subtilis Cell Walls using Hofmeister Salts** // Seungri Kim (City College of New York)
MSE P16	**[SEED2023] Solvent-Free Synthesis and Modification of Membranes for Industrially Relevant Gas Separations** // Dennis Lee (Johns Hopkins University)
MSE P17	**Compositional Redistribution, Phase Transformation, Microstructural Development in SS316L/IN625 Bimetallic Structure Fabricated by Laser Powder Bed Fusion** // Asif Mahmud (University of Central Florida)

Tech Group C-4
MSE

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

MSE Poster Session

Chair: Jiyoung Kim (University of Texas at Dallas), Chang-Yong Nam (Brookhaven National Laboratory), Jang-Sik Lee (Pohang University of Science and Technology)

Time	Title and Speaker
MSE P18	**Enhancing the performance of tungsten-based alloys through additive manufacturing** // Hyeji Im (Northwestern university)
MSE P19	**Cross-Point Array of Metal-Ferroelectric-Metal $HfZrO_2$ Capacitors for Compute-in-Memory Applications** // Minjong Lee (University of Texas at Dallas)
MSE P20	**High endurance of back-end-of-line compatible ferroelectric $Hf_{0.5}Zr_{0.5}O_2$ thin films through low temperature annealing** // Jong Mook Kang (Kangwon National University)
MSE P21	**Computational Design and Analysis of Metal Halide Perovskites: Toward Eco-friendly and Highly Stable Solar Cells** // Ki-Ha Hong (Hanbat National University)
MSE P22	**Effect of Carbon on The Microstructure and Mechanical Properties of Carbon-bearing Steels in Laser Powder Bed Fusion** // Thinh Huynh (University of Central Florida)
MSE P23	**Electronic Transport in Pd-$PdHx_{(0 \le x < 0.7)}$ Film in Ambient Temperature** // Jong-Hee Park (DePaul University)

Civil and Environmental Engineering, Architecture (CEA)
Technical Group C-5

The Civil, Environmental, and Architecture (CEA) Engineering Symposium covers diverse engineering and scientific themes every year. At the 36th annual UKC conference, the CEA symposium presents recent advancements in assessing and promoting the resilience of buildings, transportation infrastructure, and the environment. All participants will share and learn new paradigms and perspectives brought by the unprecedented events and many short-lived trends via three technical sessions: toward the sustainable environment; more resiliency for the built infrastructure; and into the future materials and field practices.

Chair

Youngguk Seo

Kennesaw State University

Co-chair

Jung Heum Yeon

Texas State University

Tech Group C-5
CEA

@ Lone Star1

Aug 3 _ Thursday _ 4:00 – 6:00pm

Transport Institute (KOTI) Session: Korea Highway Management Technology and Policy
Chair: Brian Park (University of Virginia)

Time	Title and Speaker
4:00	**Vice President's Welcome Remarks** // Jeehyung Park (KOTI)
4:05	**Scenario Development Methodology for Automated Vehicle Evaluation** Invited // Ilsoo Yun (Ajou University)
4:25	**Digital Transformation of Road Management in Korea** // Chandle Chae (Road Transport Policy of Korea Transport Institute)
4:50	**Introduction of Panelists** // Jeehyung Park (KOTI), Mihyeon Jeon (Atkins), Hanseon Cho (KOTI)
5:10	**Panel Discussion and Q&A**
5:50	**Wrap-up and Group Photo**

Tech Group C-5
CEA

@ Lone Star2

Aug 3 _ Thursday _ 4:00 – 6:00pm

CEA Session I: Innovative Ideas in Construction
Chair: John McFadden (FHWA), Co-Chair: Namho Cho (University of Iowa)

Time	Title and Speaker
4:00	**Facility Management Practice for Public University: A case study on the University of Iowa** // Namho Cho (University of Iowa)
4:20	**Towards Portable and Accurate Ergonomic Assessment in Construction** // Ju Hyeong Ryu (West Virginia University)
4:40	**Automated Estimation Model for Liquidated Damages in General Provisions of Equipment Purchasing Orders** // Sea-eun Park (POSTECH)
5:00	**[SEED2023] Virtual Reality Educational Simulation for Construction Management** // Suryeon Kim (Texas A&M University)
5:20	**AI-driven contract risk extraction model** // Jeehee Lee (University of Nevada, Las Vegas)
5:40	**Using Data to Integrate Equity in Infrastructure Project Selection Process** // John McFadden (FHWA)

Tech Group C-5
CEA

@ Lone Star1

Aug 4 _ Friday _ 4:00 – 6:00pm

CEA Session II: Natural Disasters: Predictions and Post-damage Assessments
Chair: Min Jae Suh (Sam Houston State University)

Time	Title and Speaker
4:00	**Green Infrastructure Design and Runoff Reduction Evaluation for Metro City Level: The Case Study of Suwon City** // Junsuk Kang (Seoul National University)
4:20	**Assessing Vulnerability of South Korea to Typhoon Damage Considering Sea Level Rise: A Case Study of Typhoon Maesak Simulation** // Jin young Kim (University of Texas at Arlington)
4:40	**Multivariate Frequency Analysis Framework for Hurricane Events and Its Application on Hurricane Ian** // Eunsaem Cho (Florida State University)
5:00	**Event coincidence of dryness, conflict, and forced migration in Somalia** // Woi Sok Oh (Princeton University)

Tech Group C-5
CEA

@ Lone Star2

Aug 4 _ Friday _ 4:00 – 6:00pm

CEA Session III: Towards Sustainable and Smart Buildings
Chair: Eul-Bum Lee (GIFT)

Time	Title and Speaker
4:00	**Investigating the Relationship between Human Physiological Responses and Indoor Environmental Quality in Commercial Buildings** // Joon-Ho Choi (University of Southern California)
4:20	**Evaluation of V-COP model for real-time monitoring of EHP performance** // Jihyun Seo (Korea Institute of Energy Research)
4:40	**Fast Load Prediction Model of Chiller using Bayesian Optimization** // Juwan Ha (NC State University)
5:00	**An Empirical Analysis of Korean Household Appliance Use Patterns: using a national Time Use Survey dataset** // Seungmin Lee (NC State University)
5:20	**In-situ evaluation of non-destructive insulation performance measurement method of building envelope** // Daehwan Shin (Korea Institute of Energy Research, KIER)

Tech Group C-5
CEA

@ Wildcatters

Aug 4 _ Friday _ 4:00 – 6:00pm

CEA Session IV: Future Mobility
Chair: Mihyeon Jeon (Atkins), Co-Chair: Brian Park (University of Virginia)

Time	Title and Speaker
4:00	**Physics-Informed Neural Network-based Computational Solid Mechanics Model for Problems with Material Heterogeneity** // Hyeeun Kong (Penn State University)
4:30	**Field Evaluation Plan of Connected Vehicle Identification System** // Byungkyu Brian Park (University of Virginia)
5:00	**Common Data Requirements for Digital Twin Data Interoperability in Capital Projects** // John Oh (Texas A&M University)

Tech Group C-5
CEA

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

CEA Poster Session
Chair: Jun Kim (Florida Polytechnic University)

Time	Title and Speaker
CEA P1	**Heat Stress Conditions and Awareness of Roofers in South Texas** // Min Jae Suh (Sam Houston State University)
CEA P2	**Fenton-like catalytic ceramic membrane hybrid system for the advanced water treatment** // Youngkun Chung (Rice University)
CEA P3	**Development of Smart Harmful Algal Bloom (HAB) Detection System Using Unmanned Aerial Vehicle (UAV) and Hyperspectral Sensor** // Da Yun Kwon (Korea University)
CEA P4	**Multiple heavy metal detection in greywater using a novel MoS2-chitosan-based electrochemical sensor** // Woo Hyoung Lee (University of Central Florida)
CEA P5	**Purification of Phosphoric Acid Manufacturing Process Water with Recovery of Critical Materials using MCDI** // Jun Kim (Florida Polytechnic University)
CEA P6	**An Electrical Heating Technique for Environmentally Friendly Winter Maintenance of Transportation Infrastructure** // Jung Heum Yeon (Texas State University)
CEA P7	**Pathway to a Just Transition: Bridging Regional Inequality of Clean Energy Through Hydrogen** // Gina Park (Cornell University)
CEA P8	**[SEED2023] Development of On-site Quality Management System for Asphalt Pavement Using IoT**// Dong Hyuk Kim (University of Georgia)
CEA P9	**[SEED2023] Multifunctional Flexible Sensor for Temperature and Strain Detection** // Bo Mi Lee (University of Central Florida)
CEA P10	**Assessment of Thermal Comfort in Response to Urban Spatial Changes** // Seoyoung Lee (Seoul National University)

Electrical and Computer Engineering (ECE)
Technical Group C-6

The Electrical and Computer Engineering Symposium is designed to provide emerging technologies and diverse developments in a wide range of disciplines of Electrical and Computer Engineering. With the global success of smart devices and the increasing importance of intelligent systems, this symposium provides a platform to introduce the latest innovations as well as showcase applications enabled by these technologies. This symposium brings together scientists and engineers from the US and Korea, promoting the opportunity for technical information exchange and research collaboration between these two vibrant communities.

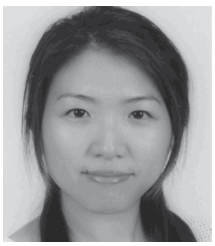
- ECE symposium will cover
  i) electronic and photonic devices
  ii) integrated circuits, intelligent systems, control, and networks
  iii) emerging applications in healthcare, artificial intelligence, and robotics
  iv) energy, power, and other areas of smart devices and systems

Chair

Jin W Choi

Michigan Technological University

Co-chairs

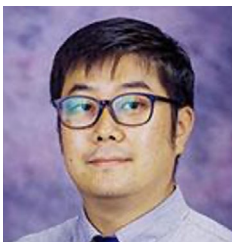


Wookyung Sun

Seoul National University

Jeongwon Park

University of Nevada at Reno



Jungkwun Kim

University of North Texas

Tech Group C-6
ECE

@ San Antonio

Aug 3 _ Thursday _ 4:00 – 6:00pm

ECE Session I: Advancements in Emerging Technologies

Chairs: Jin W Choi(Michigan Technological University), Wookyung Sun(Seoul National University), Jeongwon Park(University of Nevada at Reno), Jungkwun Kim (University of North Texas)

Time	Title and Speaker
4:00	**Fabrication of OLED Lighting Auxiliary Electrode by Self-aligned Inkjet Printing Process** // Sang-Ho Lee (Korea Institute of Industrial Technology)
4:20	**Fully Portable Wireless Soft Stethoscope and Machine Learning for Continuous Real-Time Auscultation and Automated Disease Detection** Invited // W. Hong Yeo (Georgia Tech)
4:40	**Printed Hybrid Electronics** // Donghun Park (3DFlexible Inc.)
5:00	**Self-Rotating Discharge using a Pattered Dielectric Area in Ambient Air and Potential Application in Materials Surface Modification** Invited // Choonsang Park (Milligan University)

Tech Group C-6
ECE

@ San Antonio

Aug 3 _ Thursday _ 4:00 – 6:00pm

ECE Session I: Advancements in Emerging Technologies

Chairs: Jin W Choi(Michigan Technological University), Wookyung Sun(Seoul National University), Jeongwon Park(University of Nevada at Reno), Jungkwun Kim (University of North Texas)

Time	Title and Speaker
5:20	**Lab on a Smartphone (LOS): a smartphone-integrated optoelectrowetting platform as a portable environmental sensor for on-site water quality monitoring** // Sean Park (San Diego State University)
5:40	**Microfabrication of Hollowed Microneedle Array by Diffraction Lithography** // Jungkwun Kim (University of North Texas)

Tech Group C-6
ECE

@ San Antonio

Aug 4 _ Friday _ 4:00 – 6:00pm

ECE Session II: Innovations in Semiconductor and Wireless Technologies

Chairs: Jin W Choi(Michigan Technological University), Wookyung Sun(Seoul National University), Jeongwon Park(University of Nevada at Reno), Jungkwun Kim (University of North Texas)

Time	Title and Speaker
4:00	**Automatic Array Calibration System for Wireless Microwave Power Transmitter** Invited // Sang-Hwa Yi (Korea Electrotechnology Research Institute)
4:20	**5.8 GHz High-power Rectifier using GaN-HEMT diode for wireless Power Transmission Application** Invited // Wonseob Lim (Korea Electrotechnology Research Institute)
4:40	**Energy harvesting power management circuits for dual-battery configuration** Invited // Kyoungho Lee (Korea Electrotechnology Research Institute)
5:00	**An overview of DRAM cell architecture post-Moore law era** // Wookyung Sun (Seoul National University)
5:20	**Plasmon FET for Tailored Photodetection and Bio Sensing** // Sung Jin Kim (University of Louisville)
5:40	**Innovations in Nanoelectronics: Exploring the Possibilities of 2D Materials** // Jeongwon Park (University of Nevada Reno)

Tech Group C-6
ECE

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

ECE Poster Session

Chairs: Jin W Choi(Michigan Technological University), Wookyung Sun(Seoul National University), Jeongwon Park(University of Nevada at Reno), Jungkwun Kim (University of North Texas)

Time	Title and Speaker
ECE P1	**Region-based conversion of neural activity across sessions** // Woohyun Eum (University of Florida)
ECE P2	**Effective fetal ECG extraction for non-invasive ambulatory monitoring** // Yongkuk Lee (Wichita State University)
ECE P3	**LED Evaluations for Photovoltaic Impedance Spectroscopy** // Sung Yeul Park (University of Connecticut)
ECE P4	**Evaluation of transient and small-signal stability of Korean power system along the penetration of renewable energy** // Jongoh Baek (Texas A&M University)
ECE P5	**Artificial Neural Network(ANN) Based Maximum Power Point Tracking(MPPT) Algorithm for a Photovoltaic Application** // Woonki Na (California State University, Fresno)
ECE P6	**Fast Recognition of Crop Parts Using 3D Point Clouds and Semantic Segmentation Neural Network** // Young Jae Ryoo (Mokpo National University)

Computer and Information Sciences (CIT)
Technical Group C-7

The Computer Sciences and Information Technologies (CIT) symposium encompasses diverse areas of research and development in CS/IT fields as well as the arts and social sciences. The symposium also provides variety of opportunities to emerge entertainment and other technology related areas such as connected vehicles, smart city and bio-medical. The symposium also provided a unique venue for CS/IT researchers and engineers from both academia and industry in the US and Korea. The topics include artificial intelligent, machine learning, data science, connected vehicles, augmented reality/virtual reality, art technology, software engineering, human computer interaction, big data and data analytics, Internet of Things (IoT), cybersecurity, robotics and computer educations. The CIT Symposium consists of regular sessions and poster session.

Chair

Ohbong J. Kwon

New York City College of Technology

Co-chairs

Hoyoung Hwang

Hansung University

Donghoon Kim

Arkansas State University

Tech Group C-7
CIT

@ Grapevine

Aug 3 _ Thursday _ 4:00 – 6:00pm

CIT Session I: Artificial Intelligence (AI) and Machine Learning (ML)
Chair: Ohbong Kwon(New York City College of Technology), Co-Chair: Hoyoung Hwang (Hansung University)

Time	Title and Speaker
4:00	**Gated Transformer Networks for Drug Classification using MultiDimensional Time-Series Animal Behavioral Data** Invited // Sung-Cheol Kim (PsychoGenics)
4:20	**Cloud-based Integrated Development Environment to Improve Hands-on Activities in a Mobile App Course** // Sam Chung (City University of Seattle)
4:40	**Skyscraper Games for Kids: Lessons Learned from a STEM Contest for Kids** // Frank Lee (Drexel University)
5:00	**Disadvantaged Business Enterprise (DBE) Program Fraud Detection using Natural Language Processing** // Jay Jaeshik Shin (Seoul National University)
5:20	**Enhanced Deep Learning Model for Structural Damage Identification via Random Vibration** // Jongyeop Kim (Georgia Southern University)
5:40	**A Comparative Study of PWAs and React Native Mobile Apps** // Sam Chung (City University of Seattle)

Tech Group C-7
CIT

@ Grapevine

Aug 4 _ Friday _ 4:00 – 6:00pm

CIT Session II: Security

Chair: Ohbong Kwon (New York City College of Technology), Co-Chair: Donghoon Kim (Arkansas State University)

Time	Title and Speaker
4:00	**Integrating Geographic Information Systems and Automatic Identification Systems for Maritime Logistics** Invited // EunSu Lee (New Jersey City University)
4:20	**A Case Study of Next.js's Hybrid Rendering vs. React.js' Client-Side Rendering** // Shingo Kise (City University of Seattle)
4:40	**Enhanced Real-Time Fingerprinting Attacks on Tor Networks** // Donghoon Kim (Arkansas State University)
5:00	**Hierarchical Reinforcement Learning Architecture to Deal With Multi-Horizon Complex Systems** // Prasad Nethala (Texas A&M University-Corpus Christi)
5:20	**Hippocampus Inspired Cognitive Architecture (HICA) for Few-shot Learning** // Deokgun Park (University of Texas at Arlington)
5:40	**Machine Learning Algorithm: Predicting the Price of Soybean** // Soon-Ok Park (Governors State University)

Tech Group C-7
CIT

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

CIT Poster Session

Chair: Ohbong Kwon (New York City College of Technology), Co-Chair: Jeongkyu Lee (Northeastern University)

Time	Title and Speaker
CIT P1	**Science and Engineering Education using Drone** // Jounsup Park (California Baptist University)
CIT P2	**Analysis of Community Connectivity in Spatial Transcriptomics Data** // Kyeong Joo Jung (The Ohio State University)
CIT P3	**Potential Transformative Impact of Flood Service Drones** // Jae Hyeon Ryu (University of Idaho)
CIT P4	**Conceptualizing Information Drone to Benefit Underserved People** // Jae Hyeon Ryu (University of Idaho)
CIT P5	**Resource-Efficient Parameter Tuning in Text-to-Speech Models** // Chan Gi Hong (Gwangju Institute of Science and Technology)
CIT P6	**Investigating the cause of selection by using an evolutionary model that incorporates amino acid physicochemical properties** // Hannah Kim (Temple University)
CIT P7	**Evaluating Autoencoder Structures for Testing Location Integrity** // Jinpyo Kim (Texas A&M University-Commerce)

Industrial, Manufacturing, and Systems Engineering, Management Sciences, Operations Research (IMS)
Technical Group C-8

The Industrial Engineering and Management Science (IMS) Symposium aims to discuss recent theoretical advancements and practical developments in the areas of industrial and systems engineering, management science, and supply chain management. The symposium would disseminate, to all branches of academy and industry across the U.S. and Korea, the most relevant theoretical research as well as applications. Topics include, but are not limited to: Intelligent Systems, Internet of Things (IoT), Supply Chain Risk Management, Service Science, Revenue Management, Finance Technology, Artificial Intelligence and Big Data Analytics, Optimization, Network Science, Transportation Science & Logistics, System Simulation, Modeling & Decision Analysis, Quality & Reliability Engineering, Engineering Economic Analysis, and Ergonomics & Human Factors.

Chair

Jeong Hoon Choi

Youngstown State University

Co-chairs

Tai-Woo Chang

Kyonggi University

Hyesung Park

Georgia Gwinnett College

Tech Group C-8
IMS

@ Austin

Aug 3 _ Thursday _ 4:00 – 6:00pm

IMS Session I: Health Care and Sustainability
Chair: Hyesung Park (Georgia Gwinnett College)

Time	Title and Speaker
4:00	**The Impact of Misinformation on Health Interventions to Prevent the Spread of Covid-19 in Eastern and Southern Africa** Invited // Sang-Heui Lee (Pittsburg State University)
4:20	**Strategic Capacity Management for Deferred Surgeries** // Eojin Han (Southern Methodist University)
4:40	**Renewable-Battery Hybrid Power Plants in Congested Electricity Markets: Implications for Plant Configuration** // Hyungkwan Kim (Lawrence Berkeley National Laboratory)
5:00	**Challenges in Managing Workload and Anxiety in Gateway Programming Courses** // Hyesung Park (Georgia Gwinnett College)
5:20	**The Vulnerability of the Blood Supply Chain in the U.S.** // Jeong Hoon Choi (Youngstown State University)
5:40	**Proposal of a Parametric-based Generative Design Tool for Customized Mouse** // Eui-Chul Jung (Seoul National University)

Tech Group C-8
IMS

@ Austin

Aug 4 _ Friday _ 4:00 – 6:00pm

IMS Session II: Industrial Engineering & Management Science Applications
Chair: Jeong Hoon Choi (Youngstown State University)

Time	Title and Speaker
4:00	**Leveraging Smart Contracts for Secure and Asynchronous Group Key Exchange Without Trusted Third Party** Invited // Junggab Son (University of Nevada, Las Vegas)
4:20	**Safe Drilling Depth for Deep Hole Bone Drilling** // JuEun Lee (University of the Pacific)
4:40	**Inventory and firm performance analysis in the pharmaceutical industry** // Sangdo Choi (o9 Solutions, Inc.)
5:00	**Does corporate political advocacy harm your offline business?** // Yeohong Yoon (Emory University)
5:20	**Exploring the impact of the working capital in the U.S. aviation industry for profitability and shareholder value** // Seock-Jin Hong (University of North Texas)
5:35	**The Impact of Context and Environment on Driver's Situation Awareness** // Sami Park (University of Washington)
5:50	**A Drill-Down Demand Analysis of Beef and Hay Consumption in Korea**// Eunsu Lee (New Jersey City University)

Tech Group C-8
IMS

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

IMS Poster Session
Chair: Tai-Woo Chang (Kyonggi University), Jeong Hoon Choi (Youngstown State University)

Time	Title and Speaker
IMS P1	**Prediction and Integrated Control System for the Spread of Hazardous Materials in Industrial Areas** // Minho Son (Podo Institute of Technology)
IMS P2	**Analysis of the Relationship between Innovation Activities and Profitability in Banking Industry in Korea** // Sooyeon Lim (Seoul National University)
IMS P3	**Examining the transfer of ACC training to mental models after an OTA update of Advanced Driver Assistance Systems** // Jimin Kim (University of Iowa)

Social Sciences (Anthropology, Economics, Political Science, Sociology, Public Policy, etc.), Psychology, Digital Arts, STEM Education, and Other Sciences (SSP)
Technical Group D-1

The Education Research, STEM and Social Sciences Symposium is organized by KAERA (Korean-American Educational Researchers Association) to invite leading experts and young researchers in emerging technology and DEI (Diversity, Equity, and Inclusion) in Education.

The first session focuses on the integration of advanced technologies into education. These advances brought changes in the way we learn and teach thereby significantly transforming the educational landscape. With this in mind, it will cover a wide range of topics, including but not limited to the ethical implications of AI technology in education, immersive learning experiences through AR or VR, online or flipped learning, gamification, as well as various pedagogies and teaching models.

The second session explores the topic of Diversity, Equity, and Inclusion in STEM education with a focus on Belonging for Koreans and Korean Americans. This session will bring together a group of teacher educators who are doing innovative work in DEI + Belonging. The presentations will focus on issues of DEI+B within the field of STEM teacher education. Topics will include anti-racist pedagogy, cultivating a sense of belonging in the classroom, and unpacking the differences between equity and equality to promote safe learning and teaching environments.

Chair

Jongpil Cheon

Texas Tech University

Co-chairs

Nicholas D. Hartlep

Berea College

Kyungbin Kwon

Indiana University Bloomington

Gilbert Park

Ball state University

Tech Group D-1
SSP

@ Vandergriff

Aug 3 _ Thursday _ 4:00 – 6:00pm

SSP Session I: Education and Social Science (Integration of Advanced Technology)
Chair: Jongpil Cheon (Texas Tech University), Kyungbin Kwon (Indiana University - Bloomington)

Time	Title and Speaker
4:00	**Embodied Learning for Computational Thinking** // Kyungbin Kwon (Indiana University – Bloomington)
4:15	**Solar Tree for Science, Technology, Engineering, Art, and Math** // Sung Yeul Park (University of Connecticut)
4:30	**Developing AI Chatbot System for Self-Regulated Learning** // Hyangeun Ji (Temple University), Insook Han (Korea University)
4:45	**Unraveling the Effective Teaching and Learning Strategies for Korean College Students in STEM Majors in the COVID-19 Era** // Seong Ji Jeong (The Ohio State University)
5:00	**PROJECT ADAPT – Uncovering the Potential of Arts-Integrated Digital Literacy Professional Development Program in Preservice Teachers' Digital Literacy Development and Learning Engagement** // Jewoong Moon, Kathryn O'Harra, Julianne Coleman, Kelley Schoger, Julie Bannerman (The University of Alabama)
5:15	**Exploring Strategic Differences in Debugging Between Two Groups with Different Levels of Computational Thinking Competency: Implications for Teaching Strategies** // Eunsung Park (Tennessee Tech University), Jongpil Cheon (Texas Tech University)
5:30	**Utilizing Artificial Intelligence for Personalized Career Development** // Boong Yeol Ryoo (Texas A&M University)
5:45	**Enhancing Science Affinities through a Video Project in a Science, Technology, and Society (STS) Learning Approach** // Jiyoon Yoon (University of Texas Arlington), Amanda Olsen (University of Missouri Columbia)

Tech Group D-1
SSP

@ Vandergriff

Aug 4 _ Friday _ 4:00 – 6:00pm

SSP Session II: Education and Social Science (Diversity, Equity, and Inclusion)
Chair: Nicholas D. Hartlep (Berea College), Gilbert Park (Ball State University)

Time	Title and Speaker
4:00	**Virtual Cultural Science Night with Academic Coaching** // Jiyoon Yoon (University of Texas Arlington)
4:20	**Synchronous Online Culturally Responsive Academic Tellers and Educational Supporters (SOCRATES) for Online Academic Coaching** // Jiyoon Yoon (University of Texas Arlington), Kate Koo (University of Georgia)
4:40	**The Anti-Racism Conundrum: Measuring Campus Progress** // Katherine S. Cho (Loyola University Chicago)

Tech Group D-1
SSP

@ Vandergriff

Aug 4 _ Friday _ 4:00 – 6:00pm

SSP Session II: Education and Social Science (Diversity, Equity, and Inclusion)
Chairs: Nicholas D. Hartlep (Berea College), Gilbert Park (Ball State University)

Time	Title and Speaker
5:00	**Culturally Responsive Computer Science Learning: Fostering Equity and Engagement for Minoritized High School Students** // Jung Won Hur (Auburn University), Jay Bhuyan (Tuskegee University)
5:20	**What Barriers Are Preventing Asian/Americans from Leading Educator Preparation Programs (EPPs)?** // Nicholas D. Hartlep (Berea College), Gilbert Park (Ball State University)

Tech Group D-1
SSP

@ Aviator A

Aug 4 _ Friday _ 6:00 – 9:00pm

SSP Poster Session
Chairs: Jongpil Cheon (Texas Tech University), Kyungbin Kwon (Indiana University - Bloomington), Nicholas D. Hartlep (Berea College), Gilbert Park (Ball State University)

Time	Title and Speaker
SSP P1	**Designing Drone-based STEM Instruction for Formal Spaces** // Hannah Ziegler (Vanderbilt University), Jae Ryu (University of Idaho)
SSP P2	**Development and Dissemination of Instructional Modules for Engineering Lab Writing** // Dave Kim (Washington State University)
SSP P3	**Building Inclusive and Just Pathways to a Clean Energy Economy Through Youth Education of Clean Energy** // Hyun Jin Kim, Hyunjung Ji, Sally Shettles, Mark Mueller (The University of Alabama), Amelia Salazar (Sam Houston State University), Laurel Holmes (Energy Alabama)
SSP P4	**Thermofluid Sciences for Elementary School Students via Flow Visualization Using Smartphones and Tablets** // Hyun Jin Kim, Shemai'ya Peak, Frances Buntain, Jale Ercan Dursun, Jee Suh, Celestia Morgan (The University of Alabama)
SSP P5	**Utilizing the Medium of Virtual Reality to Teach How To Recycle** // Nathan Kassai, Paul Y. Oh (University of Nevada, Las Vegas)
SSP P6	**A Case Study of Recreation-based STEM Education that Improves Unplugged Coding Education Using Musical Activities for Kindergarten Children** // Wonil Chung (Kyung Pook National University), Min Jae Park (Institute of STREAM Academy)

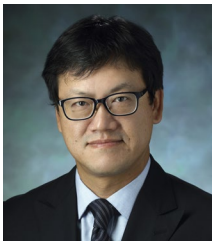
IES (Innovation and Entrepreneurship Symposium)

Innovation and Entrepreneurship Symposium (IES)

The Korean-American Scientists and Engineers Association (KSEA) is delighted to present the 5th Innovation and Entrepreneurship Symposium (IES), taking place on August 3-5, 2023 at the Hyatt Regency DFW in Dallas, TX. This symposium is designed to facilitate networking opportunities for entrepreneurial communities from both the US and Korea. The IES Demo session will provide a platform for participating startups to showcase their companies to UKC attendees and an opportunity for advancing to the Startup Pitch Competition (SPC), a highlight of the symposium, offering the chance to pitch their companies to potential investors and industry professionals while competing for a cash prize. The Idea Pitch Competition (IPC) invites early-stage startups and future entrepreneurs to present their ideas and receive feedback from the participating investors. The IPC provides great opportunities to meet future collaborators and seed investors and to compete for cash awards. Throughout the symposium, attendees will have the chance to participate in various networking events with investors, successful entrepreneurs, funding agencies, and experts in law and finance. We extend a warm invitation to all entrepreneurial-minded professionals to attend the IES and explore the growing cross-border business opportunities between the US and Korea.

Organizing Committee

Chair



IL Minn

Johns Hopkins University

Co-Chairs

Kwangrog Kim

Fundraising
Primer Sazze

Taegon Lee

Next Generation & SPC

Jungeun Kim

Korea Demo & Fundraising
Quotalab

- **Workshop Committee**: Jangwon Kim (Amazon Health), IL Minn (Johns Hopkins University)
- **Startup Demo, SPC, and IPC Committee**: Kwangrog Kim, Jungeun Kim (Quotalab), Taegon Lee (DoD), Jihee Jung, Nathan Byun
- **Public Relation Director**: Kevin Kim (Brave Turtles)
- **Next Generation Director:** Taegon Lee (DoD)
- **Local Arrangement & Publication Director:** Nathan Byun (Honeywell Robotics)
- **IT Director:** Stella RH Kim
- **General Director:** Taegon Lee (DoD)
- **Advisors:** Jun-Seok Oh (Western Michigan University), Kyungho Yang (KITEE), Jeho Park (Claremont McKenna College)

Program Overview

Time in the US Central Daylight Time, CDT

August 3 _ Thursday _ 4:00 - 6:00pm

Time	Content	Title and Speaker
4:00-5:00 pm	IES Opening Session	Moderator: Jennifer Cho. PhD • Opening Remarks - IL Minn, PhD, IES 2023 Chair • Congratulatory Remarks – Yongho Sohn PhD, KSEA President • IES Keynote: "*The role and prospects of tech start-ups in the era of global tech wars* (tentative)" - Donghoon Lee, CEO, SK Biopharmaceuticals
5:00-6:00 pm	AI and Entrepreneurship	Panel Discussion: The impact of generative AI Moderator: Jangwon Kim, PhD, Sr. Applied Scientist, Amazon Panelists: John Lee: Head of AI Engineering, Software Engineering Institute, CMU Chang Kim: Former Co-founder & CEO, Tapas Media

August 4 _ Friday _ 4:00 - 11:00pm

Time	Content	Title and Speaker
4:00-6:00 pm	IES Startup Pitch Session	• Moderator: TBD 20invited startups will present SPC judges will select 10 finalist
6:30-8:30 pm	IES Networking Dinner	
8:30-11:00 pm	IES Networking Gathering	

August 5 _ Saturday _ 8:00 - 3:30pm

Time	Content	Title and Speaker
8:00-10:00 am	Startup Pitch Competition 1	• Moderator: TBD
10:30-12:30 pm	UKC Closing and Award Ceremony	
1:00-3:30 pm	SPC Networking Lunch	

Call for Participation: Startup Pitch Competition and Idea Pitch Competition at UKC 2023

The Korean-American Scientists and Engineers Association (KSEA) host 5th Startup Pitch Competition and Idea Pitch Competition on August 4 and 5, during the UKC 2023 that is held at the Hyatt Regency DFW, Dallas TX. The competition aims to provide promising early-stage companies from the US and Korea with the platform to pitch their innovative solutions, ideas, and technologies to a captivated audience of industry professionals and acclaimed Investors, especially promoting US-Korea cross-border startups that would maximize the synergy between the two countries. This year features two categories of competition, the Startup Pitch Competition (SPC) for early-stage startups and the Idea Pitch Competition (IPC) for future startups. Of the many that apply, about 20 applicants will be invited for the IES DEMO session to present a short pitch on August 4. 10 finalists will be selected by SPC judges and invited to SPC on August 5 to compete for various types of rewards including cash awards.

Selected Benefits to Invited Companies

- 1:1 meeting with a matched venture capitalist
- Booth presentation during the entire IES and UKC 2023 periods to those who are invited - investors, technologists, industry veterans, UKC 2023 participants
- Networking events with investors and potential partners
- Scale-up opportunities through partnership with KSEA and its affiliated professional societies

How To Apply

Interested? We'd love to see you pitch! We request all applicants to submit a short video (video link) that gives us a sense of who you are and how your solution would be propelling the future of the world. Video submissions should cover the following points in less than 5 minutes:

- Your startup's value proposition
- Problem(s) your product and/or service is solving
- Why your startup is a good fit for the KSEA StartUp Pitch Competition

Eligibility

Eligible startups must meet the following criteria as of June 15, 2023:

- Have not received more than US$7.0 million in diluted funding **(Category 1 - Idea: US$200K, Category 2 – Startup & W-Startup: US$7.0M)**
- Are less than 7 years old

Timeline (11:59 PM in US Eastern time)

- Application due July 7th, 2023
- Invitee notification July 8th, 2023
- Idea Pitch competition August 4th, 2023
- Startup Demo August 4th, 2023
- Startup Pitch competition August 5th, 2023
- Winners announcement August 5th, 2023

How to Win

- Competition Finalists are expected to prepare a presentation showcasing the company's innovative solution, idea, and/or technology. Finalists will pitch in English or Korean.
- Each pitch will be timed to 5 minutes. At the end of the pitch, the panel of judges will be given additional 3 minutes for Q&A (up to three questions).
- Finalists will be assessed by a dedicated panel of judges consisting of acclaimed investors and industry professionals, and the results will be announced at the Award Ceremony & Closing Session on the same day.

Submission should be made at **https://bit.ly/KSEA2023SPC**

Questions may be sent to **spc.ksea@gmail.com**.

Many venture capitalists from USA and Korea accepted to judge or sponsor the competition.

Registration:
UKC.KSEA.ORG/UKC2023

UKC 2023 Dallas

INNOVATION AND ENTREPRENEURSHIP SYMPOSIUM & STARTUP PITCH COMPETITION

AUGUST 3-5, 2023
HYATT REGENCY DFW (DALLAS, TX)

SYMPOSIUM PROGRAM

- Keynote Speech
  Dong Hoon Lee
  CEO, SK Biopharmaceuticals
- General AI & Entrepreneurship
- 1-on-1 Coaching with VCs, Lawyers, Successful Entrepreneurs

IES NETWOKRING EVENTS

- IES Networking Dinner and More
  August 4
- SPC Networking Lunch
  August 5

IES Home:
HTTP://IES.KSEA.ORG/

STARTUP DEMO

August 3 and 4

STARTUP PITCH COMPETITION

Interested? Submit a video of 5 minutes or shorter that gives us a sense of who you are and how your solution would be propelling the future of the world. Submit it at ***https://bit.ly/KSEA2023SPC.***

Application Due	July 7
Invitee Notification	July 8
Idea Pitch Competition	August 4
Startup Demo	August 4
Startup Pitch Competiton	August 5
Winners Announcement	August 5

SUPPORTERS OF IES 2023

SK biopharmaceuticals
KIC Korea Innovation Center Washington DC
PRIMER SAZZE
Uiflow
B.J. KANG LAW, PC ATTORNEYS AT LAW
KDB Silicon Valley Venture Capital
KITEE Innovation to Business
Korean-American Scientists and Engineers Association 1971 Small Medium Enterprise Committee

FIRE
(Fostering Innovation in Rising Experts) Symposium

FIRE Symposium

FIRE is a symposium at UKC comprised of 100 young professionals, graduate/undergraduate students, postdocs, and junior faculty. FIRE gathers the next generation of leaders in industry and academia from North America for knowledge dissemination via two main pathways.

FIRE
Fostering Innovation in Rising Experts
Symposium

UKC FIRE 2023

1. Sharing professional development lessons learned (non-technical) such as:
   - Getting promoted/a raise
   - Acing interviews/Building strong resumes
   - Enhancing productivity with AI tools
   - Transitioning fields & unique career paths
   - Choosing between industry and academia
   - Becoming an empowering leader
   - Navigating the U.S. as a Korean/-American
   - Overcoming impostor syndrome
   - Personal Branding & Self-Advocacy

2. Networking within and outside their fields of interest to encourage broad awareness of cutting edge science and engineering fields, interdisciplinary collaborations, and skills cultivation applicable across careers in industry, academia, and government.

Organizing Committee

Chair

TJ Park

PhD Candidate
MIT

Vice-Chair

James Han

Postdoctoral Scientist
Harvard

Vice-Chair

DK Kim

Project Lead
Data Analytics
Zurich

Programs & Networking

Amy Jang

Pediatric Pharmacist
Boston Children's

Programs & Networking

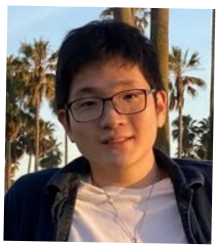
Kate Kyuri Kim

MSc Candidate
University
Toronto

Seunghwan Allen Lee

Postdoctoral Associate
MIT

Logistics & Communications



Andy Kim

Medical Scribe
Kaiser Permanente

Tommy Cho

BS Candidate
Rutgers University

Introductory Networking and Career Flash Talk

August 3_Thursday _ 4:00pm _ Innovation Ballroom

Coordinators: TJ Park, James Han, DK Kim, Kate Kim, Amy Jang

Time	Title and Speaker
4:00 pm	**Welcoming Remarks & Introductory Networking (Icebreaker)** // TJ Park, James Han, DK Kim, Kate Kim
4:45 pm	**Importance of Acquiring and Being Aware of Intellectual Properties in academic research** // Chanwook Park (PhD Candidate, Northwestern University)
4:52 pm	**A Nuclear Engineer who Dreams the World Peace** // Jihye Jeon (PhD Candidate, Princeton University)
4:59 pm	**My journey as a female engineer** // Inhwa Son (MS Candidate, University of San Francisco)
5:06 pm	**Thriving through Rejections** // Inyoung Cheong (PhD Candidate, University of Washington)
5:13 pm	**Teaching is everywhere and so are the teachers** // Seoyeon (Shawna) Kim (MSc Candidate, Queen's University)
5:20 pm	**"*Gap*" Year: Learning to Prioritize Yourself** // Hyoungjin (Harry) Park (BS Candidate, University of Southern California)
5:27 pm	**Shamelessness – My Superpower** // Jenny Namkoong (Interventional Cardiology Fellow, University of Manitoba)
5:34 pm	**Maximizing your time outside of work** // Veronica JungYeon Kim (Software Engineer, Weights & Biases)

Panel Discussion: Perspectives on Academic Careers

August 4_ Friday _ 4:00pm _ Innovation Ballroom A

Moderator: Allen (Seunghwan) Lee

Time	Title and Speaker
4:00 pm	**How do you define a successful researcher?** // Jongbok Lee (Assistant Professor, University of Calgary)
4:05 pm	**Succeeding in the Academic Job Market** // Soowon Chang (Assistant Professor, Purdue University)
4:10 pm	**Transitioning from research institution to teaching institution** // Bo Park (Assistant Professor, California State University, Fullerton)
4:15 pm	**How to Engage Students in Class: Improving Comprehension Through Practical Examples** // Daewa Kim (Assistant Professor, University of Delaware)
4:20 pm	**Open Dialogue on Academic Career Trajectories and Motivations**

Panel Discussion: Industry Careers and Interdisciplinary Opportunities

August 4 _ Friday _ 4:00pm _ Innovation Ballroom C&D

Moderator: Jonathan Young Kim

Time	Title and Speaker
4:00 pm	**Betting on yourself - making a change to a different industry or role** // John Lee (Associate Researcher, SEI)
4:05 pm	**Proactive Pathways: Navigating Success as a Korean American in the American Workplace** // Simon Park (Software Engineer, Uber)
4:10 pm	**Job interview strategies I've learned** // Edward Hong (Semiconductor Engineer, TikTok)
4:15 pm	**Hollywood in the Metaverse** // Youngmin Kim (CEO, iXR Studios | Visiting Professor, Sogang University)
4:20 pm	**Open Dialogue on Tech Career Trajectories and Future Pathways**

Presentations and schedule are subject to change.

Panel Discussion: Rewarding Careers in Healthcare and Lessons Learned

August 4 _ Friday _ 4:00pm _ Innovation Ballroom B

Moderator: James Han

Time	Title and Speaker
4:00 pm	**Informational Talk** // Kevin Riutzel (Physician, Kheir Clinic)
4:05 pm	**Lessons During the Unprecedented COVID-19 Pandemic Applicable to Precedented Times** // Jina Lim (Attending Physician, Massachusetts General Hospital / Instructor in Medicine, Harvard Medical School)
4:10 pm	**Dentist Scientist Training Program: full-ride dental school programs and career paths in dental academia** // Seung Jin Jang (DMD PhD Candidate, University of Florida)
4:15 pm	**Pharmaceutical Industry Career: Medical Affairs** // Clara Kim (Senior Manager in Medical Information Rare Tumors, Astellas Pharma US)
4:20 pm	**Open Dialogue on Future Outlook in Healthcare**

Focus Group Talks

August 4 _ Friday _ 5:00pm _ Innovation Ballroom C&D

Moderator: Kate Kim

Topic	Time	Title and Speaker
Career & Personal Development (Table 1)	5:00 - 5:20 pm	**Permission to publish denied** // Chang Hyeon Lim (Data Scientist, Dow Chemical)
	5:20 - 5:40 pm	**Permission to publish denied** // Jeong-wan Park (Postdoc, Argonne National Laboratory)
	5:40 - 6:00 pm	**Life of being Alien in USA** // Gyeonghye Yun (BS Candidate, University of Washington)
Career & Personal Development (Table 2)	5:00 - 5:20 pm	**Keeping my passions with career realities** // JeongYong (Jaylen) Park (PhD Candidate, Texas A&M University)
	5:20 - 5:40 pm	**How to find meaningful connections between my skills and dreams?** // MinYoung Yoo (PhD Candidate, Simon Fraser University)
	5:40 - 6:00 pm	**What more can I do?** // Nathaniel Chung (PharmD Candidate, Northeastern University)
Industry & Academic Career Development (Table 3)	5:00 - 5:20 pm	**Lessons learned from a manufacturing start-up, from different culture.** // Yoonseok Oh (Process engineer, SK Battery)
	5:20 - 5:40 pm	**Applying to the Job You Deserve: Internal vs External** // Jonathan Young Kim (Lead Software Engineer, Capital One)
	5:40 - 6:00 pm	**My journey to achieve a four-year Ph.D. completion in a new field** // Wonjae Yoo (Instructional Assistant Professor, Texas A&M University)
Cultural Challenges & Academic Career Development (Table 4)	5:00 - 5:20 pm	**It's OK not to be OK: How Grad School Became my Therapy** // Eugene Kim (MS Candidate, Georgia Institute of Technology)
	5:20 - 5:40 pm	**Understanding American individualism for networking** // Changkee Hong (PhD Candidate, University of Central Florida)
	5:40 - 6:00 pm	**Few lessons learned as a Korean immigrant to non-traditional graduate student** // Min Kyu Lee (MS Candidate, UCLA / Clinical Research Coordinator, California Vascular Research Foundation)

Presentations and schedule are subject to change.

Focus Group Talks (Continued)

August 4 _ Friday _ 5:00pm _ Innovation Ballroom C&D

Moderator: Kate Kim

Topic	Time	Title and Speaker
Healthcare, Tech & Industry Career Development (Table 5)	5:00 - 5:20 pm	**Confidence Built as a Dentist //** Alex Kang (DMD Candidate, Dental College of Georgia)
	5:20 - 5:40 pm	**Navigating the biotech world without a PhD //** Anna Lee (Director, Prellis Biologics)
	5:40 - 6:00 pm	**Paving the Cowpath: The Career Path of Digital Health Informaticist //** Jaehoon Lee (Lead Digital Health Informaticist, MITRE Corporation)
Interviews, Tech & Personal Development (Table 6)	5:00 - 5:20 pm	**Cultivating Interview Success: 10 Essential Tips for Young Students Embarking on Their Journey //** Dahye Kim (PharmD Candidate, University of North Carolina)
	5:20 - 5:40 pm	**Importance of Design Verification in Engineering //** Sangwoo Park (Silicon Design Engineer 2, AMD)
	5:40 - 6:00 pm	**Searching for Motivation in Work //** Seo Yeon Lee (Clinical Research Assistant, BIDMC)
Resumes & Personal Development (Table 7)	5:00 - 5:20 pm	**The reason why I quit my job after 8 years to study abroad //** Eunmi Jeong (PhD Candidate, University of Wisconsin-Madison)
	5:20 - 5:40 pm	**How to use ChatGPT to fine-tune your resume //** Hye Rin Choi (Data Engineer, Canadian Government)
	5:40 - 6:00 pm	**How to conduct research in unfamiliar research territory //** Dong Seok Lee (PhD Candidate, University of Texas at Austin)
Skills & Personal Development (Table 8)	5:00 - 5:20 pm	**Importance of Self-Advocacy in the Workplace //** Brian Shanahan (Engineer, Primera)
	5:20 - 5:40 pm	**The necessity of sabbaticals //** Jay Han (Engineering Manager, Qualtrics)
	5:40 - 6:00 pm	**Shape the World You Want to Live in //** Namhyeon Cho (Senior Project Engineer, Barton Marlow)
Mental Health, Startups &Industry Career Development (Table 9)	5:00 - 5:20 pm	**Use Imposter Syndrome to Your Advantage //** Yoona Park (Machine Learning Engineer, Apple)
	5:20 - 5:40 pm	**Why I Challenge Everyday: Lessons Learned from Leadership, Collaboration to Entrepreneurship //** Yewon Hong (BS Candidate, UC San Diego)
	5:40 - 6:00 pm	**Bridging the Gap: Merging Art and Technology - Lessons Learned in Professional Development //** Choux Kim (BS Candidate, GeorgiaTech)
Tech, Art, and Startups (Table 10)	5:00 - 5:20 pm	**Permission to publish denied //** Crystal Shin (Assistant Professor, Baylor College of Medicine)
	5:20 - 5:40 pm	**Into the Woods of Free and Open Source Software (FOSS) //** Andrew Jemin Choi (Software Engineer, Algorand)

Presentations and schedule are subject to change.

Poster Exhibition

August 4 _ Friday _ 6:00 - 9:00pm _ Aviators

Coordinators: Amy Jang, Kate Kim

Slot	Title and Speaker
FIRE1	**From Food Science to Nutritional Sciences: A Journey Starting from Scratch //** Da-Yeon Lee (PhD Candidate, Oklahoma State University)
FIRE2	**Between Cybersecurity and Aging** // Donghyun Lee (BS Candidate, Seoul National University/Georgia Tech)
FIRE3	**User Needs and Technology //** Emily Han (BA Candidate, Rutgers University)
FIRE4	**Do what you love, consider the most important values, and keep getting new good stimuli in your life. //** Hojoong Kim (Postdoc, Georgia Institute of Technology)
FIRE5	**Unveiling Passions and Pioneering Paths //** Hyukin Moon (BS Candidate, UC San Diego)
FIRE6	**How I chose my major and advisor/lab //** Inah Gu (PhD Candidate, University of Arkansas)
FIRE7	**Embracing Transformation: From Industrial and Labor Relations to Consumer Finance and Data Science at Meta //** Jonathan Kim (Data Scientist, Meta)
FIRE8	**Navigating Career Paths: MD, PhD, and MD/PhD //** Matthew Jeon (Staff Research Associate, University of California, San Francisco)
FIRE9	**How to navigate through your undergraduate life as an asian/international student. //** Min Joo Kim (BS Candidate, Vanderbilt University)
FIRE10	**Promoting Effective Collaboration: Key Strategies for Success in Research Environments //** Myeongsoo Kim (PhD Candidate, Georgia Institute of Technology)
FIRE11	**From Workforce to Academia: Transformative Lessons in Professional Development //** Rachel Chun (PharmD Candidate, UNC Chapel Hill)
FIRE12	**Baby Steps! //** Riky bae (BS Candidate, Rutgers University)
FIRE13	**Pursuing the Path of an Engineering Entrepreneur: Why I Chose to Follow My Passion. //** Saeyeong Jeon (PhD Candidate, University of Florida)
FIRE14	**Navigating Uncertainties in the Journey Towards a Ph.D. //** Sungyun Yang (PhD Candidate, MIT)
FIRE15	**Permission to publish denied //** Uijeong Jo (PharmD Candidate, UNC Chapel Hill)
FIRE16	**Designing Tomorrow: The Intersection of Creativity and Healthcare //** Venessa Mak (BS Candidate, UTMB)
FIRE17	**Computer Science and Learning Science //** Yongwan Cho (BS Candidate, Kalamazoo college)

DSW (Data Science Workshop)

Data Science Workshop

Machine Learning on Biomedical Data

Open to all non-biomedical and biomedical backgrounds with some programming experience.
Prior Online Workshop Registration and Fee Required

August 5 _ Saturday _ 1:30-6:00pm _ Innovation Ballroom C&D

Summary
This year's **Data Science Workshop** (DSW) at UKC aims:

- To provide a deeper hands-on experience with a crash course on data analysis, machine learning, and deep learning,
- For those with some prior programming but no data science experience to those looking to expand their knowledge, and
- For those without any biomedical background, as the techniques learned are domain and data agnostic.

Program
The data science workshop will be a **team-based mini-project** from start to finish of a **data science problem** using **real-world biomedical data**. Participants will begin with data cleaning, build a machine learning model, and end with presenting their own trained model. Instructors will assist teams of 2-3 participants on each mini-task to achieve the final goal of training a machine learning model and presenting it. Participants should have some programming experience with Python preferred. The computing environment will be Google Colab and the dataset will be announced at the workshop. The program schedule tentatively includes:

1. **Data Analysis of Tabular Biomedical Data (1:30-3:45pm)**

- Introduction to data science basics and machine learning concepts (e.g. definition of AI vs machine learning vs deep learning, supervised vs unsupervised, accuracy vs interpretability)
- Hands-on review of data handling and machine learning models (e.g. logistic regression, random forests, gradient boosting, artificial neural networks) on real-world biomedical tabular data (such as breast cancer histopathology or cardiac ultrasound measurement data)

2. **Machine Learning Modeling and Project Presentations (4:00-6:00pm)**

- Hands-on model building with code from templates and scratch using Python
- Team presentations of model building and performance results
- Bonus demonstration of deep learning models such as biomedical image classification using convolutional neural networks

Any questions may be addressed to the organizers at **dsw.ukc@gmail.com.**

Organizers / Instructors

Benjamin Lee (Chair) Senior Research Associate at Weill Cornell Medicine

Benjamin Lee is a researcher developing machine learning algorithms for cardiovascular medical imaging in CT, Echo, ECG, and histopathology data for heart failure, heart transplantation, and coronary plaque characterization. Ben received his Ph.D. at the University of Michigan in Electrical Engineering specializing in image processing and image reconstruction and his B.S. from Cornell University. He is currently based in New York City.

June Park (Co-Chair) Data Engineer at Daugherty Business Solutions

June Park is a Data Engineer at a solutions-based consulting company, Daugherty Business Solutions, building and maintaining data pipeline solutions for clients. She was previously a backend software engineer at Groundspeed Analytics, an insurtech startup. June received M.S. in Information at the University of Michigan and B.S. in Computational Media at Georgia Tech. She is currently based in Dallas, Texas.

Karl Kwon (Organizer) Engineering Lead at MITRE

Karl Kwon has worked on various projects, including the development of data visualization, the implementation of machine learning models, and the design of software systems. He holds a Ph.D. in Computer Science from the University of Houston, where he invented and developed a powerful data visualization called ScholarPlot. He earned his MS in computer science and his BS in software engineering. Karl Kwon is currently located in the NYC area.

DK Kim (Organizer) Project Lead & Senior Data Analytics Consultant at Zurich North America

DK Kim worked as a data analyst in the healthcare sector prior to completing a Data Science coding bootcamp. Since then, he has worked in marketing, energy, and finance, and is currently working for an insurance company. DK received his BS in Industrial Engineering with minors in Statistics and Mechanical Engineering from Texas Tech. He is currently pursuing his MS in CS part-time from Georgia Tech. DK is currently located in Chicago, IL.

Distinguished Forum

Seegene Medical Foundation (SMF) Distinguished Forum

Leading the Global Healthcare Market with Digital Healthcare

August 3 _ Thursday _ 1:30 _ Room Dallas

Chair Co-Chair Presenters







Min-Cheol Lee
Vice Director
Pathology Center
Seegene Medical Foundation (SMF)

Sung Yun Jung
Associate Professor
Baylor College of Medicine

Tae Hyun Hwang
Chair professor
Mayo Clinic

Haiyoung Jung
Chief Deputy Medical Director

Jongmun Choi
Lab director
NGS Research Center

Youngjin Park
Senior AI researcher

Suk Min Ha
AI Researcher

Seegene Medical Foundation (SMF) is a large independent reference laboratory in South Korea. The testing center headquarters is located in Seoul, and there are four regional centers. SMF provides over 4,500 testing services, including routine laboratory tests, molecular tests, pathological diagnosis, and clinical research, to clinics and hospitals nationwide. SMF performs approximately 400,000 tests daily. SMF operates the largest molecular diagnostic test center in South Korea. Its systems are capable of performing 400,000 automated COVID-19 tests per day. SMF has tested over 63 million people for COVID-19 since 2020, making it the largest testing center in Korea. SMF played a pivotal role in Korea's successful quarantine program. SMF is exploring diagnostic values through several research institutes, including the Immune Research Institute, the R&D Center for Clinical Mass Spectrometry, the Molecular Diagnostic Research Center and AI Research Center. SMF has a grand vision to be the leader in digital healthcare by leveraging big diagnostic data populated from its in vitro diagnostics services. SMF is promoting overseas expansion specifically in the United States, Europe, Southeast Asia, and Central Asia. In particular, SMF plans to diagnose and prevent diseases through IT-based digital healthcare services, and even provide treatment services.

At this forum, SMF will introduce an Open Healthcare business model for overseas expansion. SMF will also introduce the results of disease diagnosis development research using big data and artificial intelligence. Additionally, we are honored to have Professor Tae Hyun Hwang deliver a special lecture. SMF looks forward to your participation and hopes that we will be able to discuss research and build a collaborative relationship.

Time	Title and Speaker
1:30 -1:35 pm	**Welcoming Remarks** Sung Yun Jung
1:30 -1:40 pm	**Introduction to Seegene Medical Foundation** // Min-Cheol Lee, SMF
1:40 -2:10 pm	**Redefining Boundaries: Harnessing AI to Illuminate Novel Blood-Based Diagnostic, Prognostic, Predictive Biomarkers and Therapeutic Targets for Immuno and Cellular Therapy** // Tae Hyun Hwang, Florida Dept. of Cancer, Mayo Clinic
2:10-2:30 pm	**Introduction to Open Healthcare Business as a referral laboratory service and total health care platform** // Haiyoung Jung, SMF
2:30 -2:50 pm	**How to gain insights in the interpretation of clinical genomics using visualization of genetic big data?** // Jongmun, Choi, SMF
2:50 -3:05 pm	**A Sustainable and Workable Deep Leaning-based Clinical Assistant Diagnosis System for Digital Pathology** // Youngjin Park, SMF
3:05 -3:20 pm	**Multi-Organ Cell Segmentation with Watershed algorithm to automatically calculate Tumor Cellularity** // Suk Min Ha, SMF
3:20 -3:30 pm	**Open Discussion, Concluding Remarks and Photo**

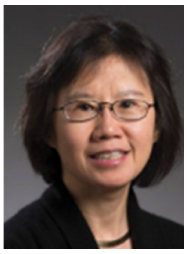
* Please note that presentation time and speakers are subject to change depending on session circumstances.

CHEY Distinguished Forum

Forum on Space Exploration and Discovery CHEY Institute for Advanced Studies

August 3 _ Thursday _ 1:30pm _ Enterprise Ballroom

Chair



Young-Kee Kim

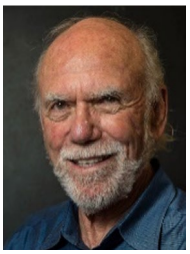
Louis Block Distinguished Service Prof. University of Chicago

Co-Chair

In Kook Park

President Chey Institute for Advanced Studies

Presenters



Barry Barish

Nobel Laureate Caltech, UC Riverside

Daniel Scheeres

Distinguished Prof. University of Colorado Boulder

Hyochoong Bang

Professor KAIST

The Chey Institute for Advanced Studies is delighted to present the forum "*Beyond Earth: Space Exploration and Discovery*." This forum aims to illuminate the latest advancements in space science and technology. Distinguished speakers, including Nobel laureate Barry Barish, renowned for his groundbreaking work on the discovery of gravitational waves, Daniel Scheeres, an esteemed expert in celestial mechanics from the University of Colorado Boulder, and Hyochoong Bang, a leading researcher in aerospace engineering at KAIST, will share their expertise. By exploring new frontiers, we anticipate fostering collaboration, exchanging knowledge, and inspiring further advancements in our understanding of the universe.

Time	Title and Speaker
1:30 - 1:35 pm	**Opening** // Young-Kee Kim, University of Chicago
1:35 - 1:45 pm	**Welcoming Remarks** // In Kook Park, CIAS
1:50 - 2:10 pm	**Presentation 1** // Barry Barish, Caltech and UC Riverside
2:10 - 2:35 pm	**Presentation 2** // Daniel Scheeres, University of Colorado Boulder
2:35 - 3:00 pm	**Presentation 3** // Hyochoong Bang, KAIST
3:00 - 3:30 pm	**Open Discussion and Photo** // All Panels

KEIT Distinguished Forum

Forum on Global Technology Strategy

August 3 _ Thursday _ 1:30pm _ Room Grapevine

Chair

Jeongwon Park

Professor
University of
Nevada Reno

Co-Chair

Sunghwan Park

KEIT US

Korea Evaluation Institute of Industrial Technology (KEIT) is the leading organization contributing the growth of manufacturing industry through development, application & commercialization of manufacturing technologies and supports for Small and Medium Enterprises (SMEs) in Korea. Its roles include planning, assessing and management of national industrial research and development programs under the Ministry of Trade, Industry and Energy (MOTIE). Since 2014, KEIT along with MOTIE has organized the KEIT Research Strategy Forum (KEIT Forum). By promoting the participation of Korean-American scientists and engineers in planning of Korea national R&D projects, we hope to improve the productivity and global cooperation in its R&D programs. To better identify and promote creative and innovative ideas for its national R&D projects planning, the major industry and technology trends will be discussed with Korean-American scientists and engineers in various areas and Korean government organization including KEIT. This year's KEIT Forum topics includes presentation of MOTIE's R&D roadmap and KEIT's policies and programs for promoting the emerging industries with focus on four industrial technology areas such as Biomedical, Materials, Batteries, and Autonomous vehicles.

Time	Title and Speaker
1:30 - 1:40 pm	**Greetings & Welcoming Remarks** // Sunghwan Park, KEIT US
1:40 - 2:00 pm	**KEIT Global R&D projects** // Chanhyuk Jung
2:00 - 2:10 pm	**Presentation of Cooperation with SWRI** // Sunghwan Park, KEIT US
2:10 - 2:40 pm	**Technical Presentations** // 4 PDs (Program Directors)
2:40 - 2:50 pm	**Case Study – Int'l R&D projects** // Youhuyn Jang, KHNP
2:50 - 3:00 pm	**Concluding Remarks and Photo** // Sunghwan Park, KEIT US

KEIT Global Technology Strategy Breakout Session (4:00 - 6:00pm)

- Wildcatter, Harvester, Ladybird, McCombs

KHNP (Korea Hydro & Nuclear Power) Distinguished Forum

Forum on Carbon Zero with Nuclear Energy

August 3 _ Thursday _ 1:30pm _ Room Hobby

Chair

Hyungook Kang

Professor
Rensselaer Polytechnic Institute

Co-Chair

Hocheol Shin

Head
KHNP CRI

Presenters

Deokwoo Nam

Senior Researcher
KHNP CRI

Jiyong Oh

General Manager
KHNP CRI

You Hyun Jang

General Manager
KHNP

Howard H. Chung

Professor
Univ. of Chicago- ANL

This forum focuses on achieving carbon neutrality through the utilization of nuclear energy, specifically emphasizing the role of small modular reactors. Currently, KHNP is developing an innovative SMR (i-SMR) and integrated the i-SMR to a platform of a zero-carbon city model, so call i- SMR Smart Net Zero City (SSNC). The SSNC model uses i-SMR for multi-purpose energy source such as electricity generation, hydrogen generation, district heat, desalination and so on. Through this forum, KHNP introduces the i-SMR design and SSNC digital model development status and shares the valuable insights with UKC members about the effective and optimized development strategies regarding i-SMR and SSNC.

Time	Title and Speaker
1:30 - 1:40 pm	**Welcoming Remarks** // Hyungook Kang, RPI & Ho Cheol Shin, KHNP CRI
1:40 - 1:50 pm	**Introduction of KHNP** // Deokwoo Nam, KHNP CRI
1:50 - 2:10 pm	**Nuclear Energy in the Age of Green Technology** // Hyungook Kang, RPI
2:10 - 2:30 pm	**Ocean Nuclear System for Propulsion and Electricity Generation** // Howard H.Chung, Univ. of Chicago- ANL
2:30 - 2:50 pm	**Safety enhancement and optimal design plan for SMR** // Jiyong Oh, KHNP CRI
2:50 - 3:10 pm	**i-SMR Smart Net-Zero City Business to lead global carbon neutrality** // You Hyun Jang, KHNP
3:10 - 3:40 pm	**Open Discussion** // Jiyong Oh, KHNP CRI
3:40 - 3:50 pm	**Concluding Remarks and Photo** // Hyungook Kang, RPI & Ho Cheol Shin, KHNP CRI

KIAT K-TAG Distinguished Forum

USA Annual General Meeting on Promotion of KOREA-US Technical Cooperation

August 3 _ Thursday _ 2:00pm _ San Antonio

Chair

Byung Joo Min

President
KIAT

Co-Chairs

Jong Y Park

Moffitt Cancer Center

Dong Hoon Yoon

University of Arkansas

The Korea Institute for Advancement of Technology (KIAT) is a comprehensive technology support organization committed to promoting industrial technology growth in Korea. Korea-Technology Advisory Group (K-TAG) USA launched by KIAT in July 2014, consists of Korean science and engineering experts in USA. Main activities of K-TAG are 1) to assist Korean Small and Medium-sized Enterprises (SMEs) in finding USA Innovative partners, 2) to provide advice as well as information related to Korea-USA R&D cooperation and 3) to develop and participate in Korea-USA joint R&D projects. In the UKC 2023, the members of K-TAG USA in various technical areas will get together to 1) seek research collaborations, 2) present/propose innovative research projects and 3) discuss R&D program planning with delegates of KIAT in this forum.

Presenters

Cheon Kyo Park

KIAT

Eunjung Kim

KIAT

Jinha Kim

KIAT

Tom Oh

Rochester Institute of Technology

Sunkyu Park

North Carolina State University

Byung-Guk Jun

Purdue University

Woo Hyoung Lee

University of Central Florida

Jungkwun Kim

University of North Texas

Deok-Ho Kim

Johns Hopkins University

Time	Title and Speaker
2:00 - 2:10 pm	**Welcoming Remarks** // Byung Joo Min (KIAT, President), Youngjin Jang (Vice Minister, MOTIE)
2:10 - 2:20 pm	**K-TAG USA Awards**
2:20 - 3:00 pm	**Collaborative R&D Policy of Korea and Revitalization Korea-US Industrial Cooperation** // Jinha Kim (KIAT, Director), TBC (KEIT)
3:00- 3:50 pm	**Open Discussion** // Vice Minister (MOTIE), President (KIAT), All participants
3:50 - 4:00 pm	**Concluding Remarks and Photo**

* Please note that presentation time and speakers are subject to change depending on session circumstances.

KITECH Distinguished Forum

Forum on Additive Manufacturing

August 3 _ Thursday _ 1:30 _ Room Houston

Chair

Kwang Jin Lee

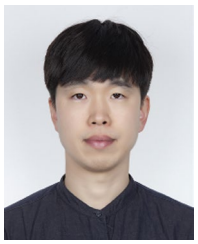
Director
KITECH USA

Co-Chair

Haseung Chung

Michigan State University

Presenters



Cheol Woo Ha

KITECH

Durim Eo

KITECH

Holden Hyer

ORNL

Additive manufacturing, commonly known as 3D printing, is progressing rapidly to revolutionize the advanced manufacturing landscape by providing new ways to design component with on-demand and on-site capability. KITECH Distinguished Forum highlights state-of-the-art status on additive manufacturing for various applications including multi-functional (e.g., structure with sensors embedded) and seeks collaborative environment to advance fundamental knowledge in additive manufacturing science.

Time	Title and Speaker
1:30 - 1:50 pm	**Introduction to KITECH** // Kwang Jin Lee, KITECH
1:50 - 2:20 pm	**Recent research on various 3D printing processes using photocuring materials in KITECH** // Cheol Woo Ha, KITECH
2:20 - 2:50 pm	**Challenges and advances in current dissimilar metal additive manufacturing** // Du Rim Eo, KITECH
2:50 - 3:20 pm	**Challenges and Advantages in Additive Manufacturing of High Temperature Strength Resistant Alloys** // Holden Hyer, Oak Ridge National Laboratory
3:20 - 3:30 pm	**Concluding Remarks and Photo** // Haseung Chung, Michican State University

K-Water Distinguished Forum

Forum on Ultra High Purity Water

August 3 _ Thursday _ 1:30pm _ Room Carter

Chair

Hyeon Sik Kim

Vice President & CRO(Chief Research officer) of K-water Research Institute

Co-Chair

Soyoon Kum

Assistant Professor at Angelo State University

Presenters

Jae Hong Kim

Professor
Yale University

Young-Shin Jun

Professor
Washington University in St. Louis

Kyung Hyuk Lee

Head Researcher of K-water Research Institute

Suk Tae Kang

Professor of KAIST

Jong Chan Yi

Senior Researcher of K-water

Ultrapure water is used for advanced industry such as semiconductor, LCD, Solar panel manufacture. In order to produce UPW (Ultrapure water), water treatment plant for UPW is complicated and require high operation technology. Thus, UPW production is recognized as not only leading-edge technology in the water industry but high value-added industrial water. The Korean government has recently declared to promote Semiconductor industry for national security as well as economic growth. As one of the main infrastructures, key technologies and strategies to promote UPW technology will be discussed.

Time	Title and Speaker
1:30 - 1:40 pm	**Welcoming Remarks** // Hyeon Sik Kim, Chief Research officer of K-Water
1:40 - 2:00 pm	**Membrane-Confined Heterogeneous Advanced Oxidation** // Jae Hong Kim, Professor Yale University
2:00 - 2:20 pm	**Photothermal Membranes for an Environmentally Sustainable and Resilient Clean Water Supply** // Young-Shin Jun, Professor Washington University in St. Louis
2:20 - 2:40 pm	**Promotion of Ultrapure water Technology for Semiconductor Industry in Korea** // Kyung Hyuk Lee, Head Researcher of K-water Research Institute
2:40 - 3:00 pm	**Occurrence and removal of urea during the wastewater reuse for ultra-pure water production** // Suk Tae Kang, Professor of KAIST
3:00 - 3:20 pm	**Advanced analytics techniques for semiconductor industries ultrapure water** // Jong Chan Yi, Senior Researcher of K-water
3:20 - 3:30 pm	**Q&A**

Yuhan Distinguished Forum

Cutting-Edge Research in Oncology

August 3 _ Thursday _ 1:30pm _ Fort Worth

Chair

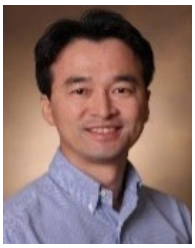
Jayoung Kim

UCLA

Presenters

Kwon-Sik Park

University of Virginia School of Medicine



Serkin Park

Korea University College of Medicine

Ju-Seog Lee

UT MD Anderson Cancer Center

Seungwon Chung

Abbvie

Yuhan Corporation is a South Korea-based pharmaceutical company founded in 1926 by Dr. Il-han New, an independence activist, educator and innovative entrepreneur. Yuhan has achieved five out-licensing deals during the past five years, resulting in a total deal size of $3.54 billion. This forum aims to shed light on cutting-edge discoveries and innovative strategies against cancer. Prof. Kwon-Sik Park will discuss the discovery of cancer vulnerabilities by synthesizing human and mouse model data. Prof. Serkin Park will shed light on the biological mechanisms of cancer bone metastasis and present novel diagnosis and treatment strategies. Prof. Ju-Seog Lee will discuss the identification of novel therapeutic targets and the development of targeting approaches, specifically focusing on antisense oligo drugs and metabolic inhibitors. And Seungwon Chung will be sharing insights on the medicinal chemistry efforts in the pharmaceutical company. By bringing together researchers and experts in the field, this forum seeks to accelerate active discussions and collaborations with esteemed academic researchers.

Time	Title and Speaker
1:30 - 1:40 pm	**Welcoming Remarks** // Taejin Yoon, Yuhan Corporation
1:40 - 2:00 pm	**Keynote Talk**
2:00 - 2:20 pm	**Discovery of cancer vulnerability by a synthesis of human and mouse model data** // Kwon-Sik Park, University of Virginia School of Medicine
2:20- 2:40 pm	**Osteoblast-lineage cells as a therapeutic target for breast cancer bone metastasis** // Serkin Park, Korea University College of Medicine
2:40 - 3:00 pm	**Identify novel therapeutic targets and development targeting approaches (antisense oligo drugs and metabolic inhibitors)** // Ju-Seog Lee, UT MD Anderson Cancer Center
3:00 - 3:20 pm	**Medicinal Chemistry effort in pharmaceutical company** // Seungwon Chung, Abbvie
3:20 - 3:30 pm	**Concluding Remarks/ Photo session**

KWiSE Distinguished Forum

KWiSE-WISET Women in STEM Forum in collaboration with KOFWST-KWSE

August 3 _ Thursday _1:00pm _ Developers

Chair

Mihyeon Jeon

Atkins

Co-Chairs

Aree Moon

WISET

Myongsook Oh

KOFWST

Seong Jin Ju

KWSE

Special Guest

Byung-Joo Min

KIAT

Founded in 2004, KWiSE (Korean-American Women in Science and Engineering) is a non-profit organization to promote career development and networking of Korean-American women professionals in the science and engineering fields. Involving all key organizations working for Korean American women in the STEM field in both US and Korea, the main objective of this forum is to exchange ideas on career development, leadership, and empowerment of women in STEM and to discuss potential policies and strategies that are needed to expedite this process. After an opening session by KWiSE and WISET, KWiSE-KWSE Session will discuss the current and planned global collaborations in women in STEM and future directions. Speakers will share examples of various on-going successful global collaborations, including Korea-US and Korea-UK. Based on these examples, we will discuss how women scientists and engineers can further strengthen existing collaboration and foster new collaborations. The KWiSE-KOFWST Session will discuss future directions and vision of organizations working for women in STEM. Vision and path forward of the two organizations (KOFWST and KWiSE) will be shared, then a panel discussion will follow on how to empower women scientists and engineers. This forum is designed to be an interactive and engaging event to foster networking and mentoring among the attendees. The forum will provide an excellent opportunity for the participants to learn from the women leaders in the STEM fields and get inspired to become a future leader in STEM.

Presenters

Jinah Park

KAIST (KWSE)

Young-Sil Kwak

KASI (KWSE)

Minchul Song

ADD (KWSE)

Hee-Kyung Ahn

The Sainsbury Laboratory

Sungsil Moon

CDC (KWiSE)

Oh Nam Kwon

Seoul National University (KOFWST)

Ran Baik

Honam University (KOFWST)

Eun-Suk Seo

University of Maryland (KWiSE)

Bo Young Park

California State University Fullerton (KWiSE)

Yongho Sohn

University of Central Florida (KSEA)

Time	Title and Speaker	
1:00 - 1:05 pm	**Opening by KWiSE President //** Mihyeon Jeon, Atkins, KWiSE	
1:05 - 1:15 pm	**Welcoming Remarks and WISET Lecture by WISET President //** Aree Moon, WISET	
1:15 - 1:20 pm	**Welcoming Remarks from KIAT President //** Byung-Joo Min, KIAT	
1:20 - 1:30 pm	**KWiSE – KWSE Session: Global Collaborations in Women in STEM**	**International Cooperation Activities of KWSE //** Seong Jin Ju, KWSE
1: 30 - 1:40 pm		**International Cooperation in Space Science: Focus on Korea-US Cooperation //** Young-Sil Kwak, KASI, KWSE
1:40 - 1:50 pm		**Medical Image Computing and Computer-Assisted Intervention – Bringing it to Korea //** Jinah Park, KAIST, KWSE
1:50 - 2:00 pm		**Current Status of Korea-US International Cooperation //** Minchul Song, ADD, KWSE
2:00 - 2:15 pm		**Thriving as Women in STEM: Stronger Together //** Heekyung Ahn, The Sainsbury Laboratory, UK
2:15 - 2:30 pm		**Korea-US Collaboration Examples: Examples of US Government Agencies //** Sungsil Moon, CDC, KWiSE
2:30 - 2:45 pm	**Group Photo Time, Coffe Break**	
2:45 - 3:00 pm	**KWiSE – KOFWST Session: Future Directions and Vision of Women in STEM**	**20 Years of Leadership and Future Vision of KOFWST //** Myongsook Oh, KOFWST
3:00 - 3:10 pm		**What's Ahead for KWiSE: Vision and Path Forward //** Mihyeon Jeon, Atkins, KWiSE
3:10 - 3:25 pm		**Fostering DE&I and Allyship //** Oh Nam Kwon, Seoul National University, KOFWST
3:25 - 3:55 pm		**Panel Discussion Q&A //** Ran Baik, Honam University, KOFWST; Eun-Suk Seo, University of Maryland, KWiSE; Bo Young Park, California State University Fullerton, KWiSE
3:55 - 4:00 pm	**Congratulatory Remarks //** Yongho Sohn, University of Central Florida, KSEA President **Concluding Remarks and Group Photo Session //** Mihyeon Jeon, Atkins, KWiSE	

Sponsor Forum

KBSI Sponsor Forum

Multipurpose Synchrotron Radiation (4GSR):
Current States and Future Prospects at the Korea Basic Science Institute (KBSI)

August 4 _ Friday _ 1:30pm _ Room Vandergriff

Chair

Young-Kee Kim

University of Chicago

Co-Chairs

Sung Kwang Yang

President
KBSI

Hyoung Joong Yun

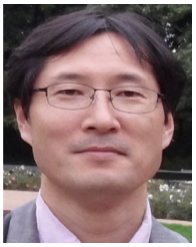
KBSI

Presenters

Jaehoon Yu

UT Arlington

To promote the collaborative development and utilization of the synchrotron facility, we would like to introduce the recent progress of the new multipurpose synchrotron (4GSR) project and x-ray science programs in Korea. We also invite speakers of accelerator and x-ray science in US society to find a way for future collaboration.

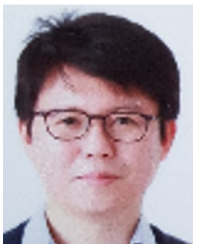


Jae Hun Park

Pohang
Accelerator Lab

Seung Hwan Kim

POSTECH



Kyung Tae Ko

KBSI

Won Suk Cha

Argonne
National Lab

Time	Title and Speaker
1:30 - 1:35 pm	**Opening Remarks** // Hyoung Joong Yun, Korea Basic Science Institute
1:35 - 1:40 pm	**Welcoming Remarks** // Sung Kwang Yang, Korea Basic Science Institute
1:40 - 1:45 pm	**Introduction Remarks** // Young-Kee Kim, University of Chicago
1:45 - 2:00 pm	**Technical Presentation 1** // Jaehoon Yu, University of Texas, Arlington
2:00 - 2:15 pm	**Technical Presentation 2** // Jae Hun Park, Pohang Accelerator Laboratory
2:15 - 2:30 pm	**Technical Presentation 3** // Kyung Tae Ko, Korea Basic Science Institute
2:30 - 2:45 pm	**Technical Presentation 4** // Won Suk Cha, Argonne National Laboratory
2:45 - 3:25 pm	**Open Discussion** // All participants, Seung Hwan Kim, POSTECH
3:25 - 3:30 pm	**Concluding Remarks and Photo** // Sung Kwang Yang, Korea Basic Science Institute

* Please note that presentation time and speakers are subject to change depending on session circumstances.

KEIT-SWRI Sponsor Forum

Forum on Future Mobility R&D

August 4 _ Friday _ 1:30pm _ Grapevine

Chair

Sunghwan Park

Director of KEIT US

Co-Chair

Terry Alger

SWRI

Korea Evaluation Institute of Industrial Technology (hereafter as 'KEIT') signed MoU with South West Research Institute (hereafter as 'SWRI') on April 2023 for cooperation in industrial R&D. Since each party agreed to support the cooperative work between the two countries and academic exchange, both parties decided to hold the KEIT-SWRI Academic Forum on Future Mobility R&D in UKC 2023.

Time	Title and Speaker
1:30 - 1:35 pm	**Opening Remarks** // Sunghwan Park and Dr. Terry Alger
1:35 - 1:40 pm	**Welcoming Remarks** // Youngjin Jang, Vice Minister of MOTIE
1:40 - 1:45 pm	**Welcoming Remarks** // Yong Weon Seo, Vice President of KEIT
1:45 - 2:15 pm	**Presentation on Mobility** // KATECH & SWRI
2:15 - 2:45 pm	**Presentation on Batteries** // KETI & SWRI
2:45 - 2:55 pm	**Open Discussion**
2:55 - 3:00 pm	**Concluding Remarks and Photo**

KHIDI Sponsor Forum

Career Development through Research Opportunities in US

August 4 _ Friday _ 1:30pm _ Room Fort Worth

Chair

Soondo Cha

President of KHIDI

Co-Chair

Youngmi Ji

NIH

Presenters

Sanghun Shin

KHIDI

Hoi Sung Chung

NIH

Young-Sup Yoon

Emory university

Jun-Ho La

UTMB

This forum sponsored by Korea Health Industry Development Institute (KHIDI) aims to provide a platform for Korean researchers who wish to gain training experience in the US where researchers with training experience in the US can share their experiences and opportunities. The purpose is to gather opinions presented in this forum and incorporate them into future implementation of the personnel exchange program conducted by KHIDI.

Time	Title and Speaker
1:30 - 1:40 pm	**Welcoming remarks and KHIDI introduction** // Soondo Cha, KHIDI
1:40 - 1:50 pm	**Introduction to KHIDI and KVSTA program** // Sanghun Shin, KHIDI
1:50 - 2:15 pm	**Introduction to research Opportunities at NIH** // Hoi Sung Chung, NIH
2:15 - 2:40 pm	**Post-doc experience sharing - I** // Young-Sup Yoon, Emory University
2:40 - 3:05 pm	**Post-doc experience sharing - II** // Jun-Ho La, UTMB
3:05 - 3:30 pm	**Q & A** // Youngmi Ji, NIH

KICT Sponsor Forum

AI-based Innovative Technology for Advanced Urban Infrastructure Management:
Focusing on Autonomous Driving and Flash Flood

August 4 _ Friday _ 1:30pm _ Room Lone Star I

Chair

Seung-Ki Ryu

Director
KICT

Co-Chair

Sung-Hee (Sonny) Kim

University of Georgia

Korea Institute of Civil Engineering and Building Technology (KICT) is Korea's only government-funded research institute in the area of construction technology. Drawing on the unrivaled R&D capacities we have accumulated over upwards of 40 years, we are an institution dedicated to our social roles and responsibilities as a body for research. In this context, this forum serves as a platform to foster discussion about AI-based innovative technology for infrastructure management by presenting studies and projects from the U.S. and Korea.

Presenters

Jaehong Park

Senior Researcher
KICT

AdamKasliszewks

Project Delivery
Director, CAVNUE

Hyung-Jun Kim

Senior Researcher
KICT

Jaehak Jeong

Professor
Texas A&M University

Dong Sop Rhee

Research Fellow
KICT

Time	Title and Speaker
1:30 - 1:35 pm	**Welcome Remarks** // Hyeonjun Kim, Vice President for Research of KICT
1:35 -1:45 pm	**KICT's Research Activities** // Kang-Suk Kim, Head of Research Policy Division, KICT
1:45 - 2:00 pm	**Innovative Highway Design and Management for Autonomous Driving Environment** // Jaehong Park, Senior Researcher, KICT
2:00 - 2:15 pm	**The Future of Roads** // Adam Kasliszewks, Project Delivery Director, CAVNUE
2:15 - 2:30 pm	**Development of AI Flood Analysis and Forecasting Method based on Intelligent Information Technology** // Hyung-Jun Kim, Senior Researcher, KICT
2:30 - 2:45 pm	**Hydrologic Assessment of Urban Green Infrastructure** // Jaehak Jeong, Professor, Texas A&M University
2:45 - 3:00 pm	**Development of Technology to Reduce Urban Flood Damage through Simulated Inundation on the Environmental Facility** // Dong Sop Rhee, Research Fellow, KICT
3:00 - 3:20 pm	**Panel Discussion** // Chairs and Speakers
3:20 - 3:30 pm	**Concluding Remarks and Group Photo** // All

KISTEP Sponsor Forum

R&D Directions and Policies for Dual-Use Technology

August 4 _ Friday _ 1:30pm _ Room Dallas

Chair

Byung-Seon Jeong

KISTEP

Co-Chair

Tom Oh

Rochester Institute of Technology

Presenters

Seung-Hyuk Lim

KISTEP

Kyung-Shick Choi

Boston University

Brian Shipley

US Navy

Lae Hyunk Kim

KIST

KISTEP Forum on "*R&D Directions and Policies for Dual-Use Technology*" will seek efficient application and linkage of dual-use technology between civil and defense science and technology including commercialization. The forum will find ways to promote cooperation between Republic of Korea and the United States to learn and merge directions and policies through comparison and analysis.

Time	Title and Speaker
1:30 - 1:35 pm	**Welcome Remarks** // Young Chang Joo, Vice Minister for S&T and Innovation, MSIT
1:35 - 1:45 pm	**Welcome Remarks / Introduction to KISTEP** // Byung-Seon Jeong, KISTEP
1:45 - 2:10 pm	**The importance of effectively applying and linking dual-use technologies** // Seung-Hyuk Lim, KISTEP
2:10 - 2:35 pm	**Navigating the Nexus of Data Protection and Information Sharing in Government Cybersecurity** // Kyung-Shick Choi, Boston University
2:35 - 3:00 pm	**Overview of US NAVY SBIR/STTR programs** // Brian Shipley, US Navy
3:00 - 3:25 pm	**S. Korea-US cooperation on Defense R&D** // Lae Hyunk Kim, KIST
3:25 - 3:30 pm	**Closing Remarks and Photo** // All participants

* 10 minutes of presentation (+10 minutes of consecutive interpretation) followed by 5 minutes of Q&A

KITECH Sponsor Forum

Forum on Rare Metals: Eco-Friendly Processing Technology and Applications

August 4 _ Friday _ 1:30pm _ Room Houston

Chair

Kwang Jin Lee

Director of KITECH USA

Co-Chair

Yang-Ki Hong

University of Alabama

Presenters

Kyoung Tae Park

KITECH

Jun Hee Han

KITECH

Lee Seung Kang

ORNL

KITECH Forum focuses on analyzing the current state of the rare metal industry in Korea and highlight the role of the Korea Institute for Rare Metals (KIRAM) at the Korea Institute of Industrial Technology (KITECH). Furthermore, we introduce the infrastructure development projects and research and development (R&D) cases of KIRAM especially on the topic of eco-friendly processing technology and applications, and discuss strategies for enhancing the competitiveness of the Korean rare metal industry and stabilizing the supply chain in the rapidly changing global value chain (GVC) environment.

Time	Title and Speaker
1:30 - 1:40 pm	**Welcome and Introduction to KITECH KIRAM** // Kwang Jin Lee, KITECH
1:40 - 2:05 pm	**Introduction to rare metal industries in Korea** // Kyoung Tae Park, KITECH
2:05 - 2:30 pm	**Overview of research activities in KIRAM** // Jun Hee Han, KITECH
2:30 - 2:55 pm	**Target technology for rare metals processing** // Lee Seung Kang, KITECH
2:55 - 3:20 pm	**Design of magnetic materials and permanent magnet synchronous motors for electric vehicles** // Yang-Ki Hong, University of Alabama
3:20 - 3:30 pm	**Concluding Remarks and Photo** // Chair and Co-Chair

Seoul National University (SNU) Sponsor Forum

Forum on Transformative Actions: Pioneering the Future

August 4 _ Friday _ 1:30pm _ Room Austin

Chair

Jae Young Kim

Executive Vice President for Research Affairs
Seoul National University

Co-Chair

Jaejun Yu

Dean
College of Natural Sciences
Seoul National University

Presenters

Jaejin Lee

Dean
Graduate School of Data Science,
Seoul National University

Junseok Hwang

Director
Global R&DB Center
Seoul National University

Junsuk Kang

Director
Specialized Graduate School of Intelligent Eco-Science
Seoul National University

Seoul National University, a prestigious educational institution renowned for its academic excellence, has consistently pushed boundaries and fostered innovation across various disciplines. This forum serves as a platform to explore and celebrate the transformative actions taken by SNU in paving the way for a brighter and more progressive future.

This forum aims to shed light on the diverse initiatives that have been instrumental in shaping SNU's transformative actions. From groundbreaking research projects and interdisciplinary collaborations to community engagement and sustainability efforts, SNU has left an indelible mark on society.

This forum provides an open and inclusive space for meaningful conversations. Together, let us explore the diverse facets of SNU's transformative actions and their profound impact on the future.

Time	Title and Speaker
1:30 - 1:35 pm	**Welcoming Remarks** // Jae Young Kim, SNU
1:35 - 2:00 pm	**SNU College of Natural Sciences: Driving Innovation and Discovery** // Jaejun Yu, SNU
2:00 - 2:25 pm	**SNU Graduate School of Data Science** // Jaejin Lee, SNU
2:25 - 2:50 pm	**Global Vision for Smart City & Future University** // Junseok Hwang, SNU
2:50 - 3:15 pm	**SNU Specialized Graduate School of Intelligent Eco-Science** // Junsuk Kang, SNU
3:15 - 3:25 pm	**Open Discussion**
3:25 - 3:30 pm	**Concluding Remarks and Photo**

UNIST Sponsor Forum

The Path to Carbon Neutrality: Electrification, Decarbonization, and CO_2 Capture

August 4 _ Friday _1:30pm _ Room Hobby

Chair

Tae-Hyuk Kwon

Dean of College of Natural Science
UNIST

Co-Chair

Jungki Ryu

Associate Professor
UNIST

Presenters

Dong Suk Kim

Professor
UNIST

Tae Seok Moon

Associate Professor
Washington University in St. Louis

Sunkyu Park

Professor
North Carolina State University

Wonyoung Choe

Professor
UNIST

This symposium brings together leading experts to explore innovative approaches for achieving carbon neutrality. Topics include efficient perovskite solar cells, cutting-edge CO_2 capture technologies, electrochemical synthesis of chemicals, production of sustainable fuels from biomass, and synthetic biology for plastics upcycling. Participants will engage in discussions and presentations highlighting breakthrough research and advancements in these areas. The symposium aims to accelerate the global transition towards a sustainable and carbon-neutral future by fostering collaboration and knowledge exchange. By delving into these diverse fields, attendees will uncover transformative solutions, paving the way for renewable energy, effective carbon capture, sustainable chemical production, biomass utilization, and waste upcycling. Together, they strive to create a cleaner and greener world for generations to come.

Time	Title and Speaker
1:30 - 1:35 pm	**Welcoming Remarks** // Tae-Hyuk Kwon, UNIST
1:35 - 1:55 pm	**Major Innovative Trends in Perovskite Solar Cells** // Dong Suk Kim, UNIST
1:55 - 2:15 pm	**Beyond Catalysts: Exploring Systematic Approaches and Alternative Electron Sources in Electrolysis** // Jungki Ryu, UNIST
2:15 - 2:35 pm	**Sustainable Aviation Fuel Production from Waste Streams in Pulp and Paper Industry** // Sunkyu Park, North Carolina State University
2:35 - 2:55 pm	**Engineering Novel Microbes for Upcycling Waste Plastic and Solving the Climate Crisis** // Tae Seok Moon, Washington University in St. Louis
2:55 - 3:15 pm	**Metal-Organic Materials for Carbon Neutrality Applications** // Wonyoung Choe, UNIST
3:15 - 3:30 pm	**Panel Discussion** // Presenters/Panel Participants
3:30 pm	**Concluding Remarks and Photo** // Tae-Hyuk Kwon, UNIST

KSEA Forum

KSEA Science Policy Forum (closed session, invited only)

August 3 _ Thursday _ 10:30am _ Room Austin

Chair

Seunghwan Kim

POSTECH

Moderator

Jaehoon Yu

University of Texas, Arlington

The Science Policy Forum (SPF) will bring together key scientists and law makers in the U.S. and Korea to strengthen their network and collaboration on science and technology policy. In particular, scientists and policy makers can share ideas and best strategies for cooperation on frontier technologies of mutual interests and emerging technologies in the era of global technology supremacy. Policies of bilateral cooperation on science and technology can be discussed such that they could further enhance stronger global collaboration between scientists and policy makers between Korea and the United States.

Time	Title and Speaker
10:30 - 10:40 am	**Welcoming Remarks** // Presidents of KSEA & KOFST
10:40 - 10:50 am	**Theme Introduction** // Jaehoon Yu (University Texas, Arlington)
10:50 - 11:10 am	**U.S. Space Technology and policy** // Eunsuk Seo (University of Maryland)
11:10 - 11:30 am	***TBD** // Korean Leaders in Science & Technology
11:30 - 12:20 pm	**Speeches and Moderated Free Form Discussions** // Invited Participants
12:20 - 12:30 pm	**Concluding Remarks and Photo**

*To be confirmed

KSEA Science Diplomacy Forum

August 3 _ Thursday _ 1:30pm _ Room Austin

Chair

Jaehoon Yu

University of Texas, Arlington

Moderator

Seunghwan Kim

POSTECH

Recently, a compounded wave of global crises involving technology war and security has been affecting the scientific community as well as our society, countries, and world at all levels. As we are heading into more complex, uncertain, and conflict-prone future, it calls for proactive involvements and viable contributions from a global network of science and technology communities in addressing global challenges to our common future.

In this session, we discuss some of the key lessons learned from our experience on global agenda involving science and technology and share our thoughts on the newly found impact and the role of a global cooperation by scientific communities for a sustainable future for all. We discuss how a diverse non-government and government actors can and should work together on science and diplomacy to navigate the complexities of current and future global challenges to human survival and prosperity.

In particular, the Science Diplomacy Forum will serve as a town meeting platform for strengthening science and technology collaboration between South Korea and the United States with partners around the world and exploring the role of scientific organizations and institutions, for example, KSEA and KOFST, in promoting dialogues and bridging the growing networks between scientific and diplomatic communities to better cope with common challenges together.

Time	Title and Speaker
1:30 - 1:40 pm	**Welcoming Remarks** // Presidents of KSEA & KOFST
1:40 - 1:50 pm	**Theme Introduction** // Seunghwan Kim (POSTECH)
1:50 - 2:10 pm	**Keynote Presentation** // Eunsuk Seo (University of Maryland)
2:10 - 2:35 pm	**Presentations** // Sung-Kwang Yang (Korea Basic Science Institute, KBSI), Jeongwook Eom (KOFST)
2:35 - 3:25 pm	**Open Discussions** // Jinwon Kang(KISTEP), KSEA leaders* + CEO Myonghoon Chong*
3:25 - 3:30 pm	**Concluding Remarks and Photo**

*To be confirmed

KSEA R&D Leadership Forum

Roundtable Discussion on R&D Culture and Collaboration

August 3 _ Thursday _ 4:00pm _ Room Developers

Research institutes operated for/by government and private sectors have well-defined and focused missions for technological development and/or scientific knowledge that rely on strong foundational expertise, culture, and capability. Increasingly complex and interdisciplinary requirements for substantial and meaningful outcomes warrant an expansive network of R&D expertise, inclusive activities, and efficient administration. This roundtable discussion will examine the mission, capability, and accomplishment of various research institutes, explore the potential roles of complimentary resources to enhance the mission-critical and mission-supporting R&D activities, and discuss cultural understanding and potential mechanisms needed to further promote US-Korea interactions in R&D.

Chair

Tae (Tom) Oh

Professor
Rochester Institute of Technology

Presenters

Rebecca Lynn Spyke Keiser

Chief of Research Security Strategy and Policy
National Science Foundation

Jeremy Epstein

Program Director
Secure and Trustworthy Cyberspace (SaTC)
Lead Division of Computer and Network Systems (CISE/CNS)
National Science Foundation (NSF)

R&D Leaders from Korea

Kwang Bok Lee

President
KUSCO / NRF

Soondo Cha

President
KHIDI

Byung-Seon Jeong

President
KISTEP

Sanghoon Lee

Director
KFRI

Joonyeon Chang

Director-General
KIST

Byung Joo Min

President
KIAT

Sung Kwang Yang

President
KBSI

Young Min Choi

Vice President
KRICT

Jaehyung Kim

CTOof Hanwha
Solutions

Young-Deuk Park

President
KASI

Seungki Park

President
KAIA

Time	Title and Speaker
4:00 - 4:05 pm	**Welcome Remarks** // Tae (Tom) Oh, Professor Rochester Institute of Technology
4:05 - 5:00 pm	**Introduction from the R&D Leaders: Mission, Capability and Accomplishments** // All R&D Leaders
5:00 - 5:10 pm	**National Science Foundation** // Jeremy Epstein, Program Director Secure and Trustworthy Cyberspace (SaTC)
5:10 - 5:20 pm	**National Science Foundation** // Rebecca Lynn Spyke Keiser, Chief of Research Security Strategy and Policy , National Science Foundation
5:20 - 5:50 pm	**Roundtable Discussion** // All R&D Leaders
5:50 - 6:00 pm	**Closing Remarks and Photo** // Tae (Tom) Oh and all participants

- KAIA - Korea Agency for Infrastructure Technology Advancement
- KASI - Korea Astronomy and Space Science Institute
- KBSI - Korea Basic Science Institute
- KFRI - Korea Food Research Institute
- KHIDI - Korea Health Industry Development Institute
- KIAT - Korea Institute for Advancement of Technology
- KIST - Korea Institute of Science and Technology
- KRICT - Korea Research Institute of Chemical Technology
- KUSCO - Korea-US Science Cooperation Center

KSEA University Leadership Forum

August 3 _ Thursday _ 4:00pm _ Room Wetzel

Chair

김영기

University of Chicago

Co-Chair

정병선

한국과학기술기획평가원 원장

Presenters

권순기

경상국립대학교 총장

홍원화

경북대학교 총장

이용훈

UNIST 총장

김재관

GIST
대외협력처장

염재호

태재대학교 총장

김재영

서울대학교
연구부총장

최기주

아주대학교 총장

장윤금

숙명여자대학교 총장

윤의준

KENTECH 총장

Local cities in Korea are having a hard time due to population decline and urban concentration. Local issues do not simply end as local issues, they are issues of Seoul and of Korea as a whole. Korea is currently aiming to foster regionally specialized projects as one of the measures for local issues. Under this goal, the first session will focus on how local governments, universities, government-funded research institutes, and companies can create a healthy ecosystem that can create synergies with each other. Korea aims at sports as a specialized project in the current situation of local issues, and under this goal, the second session will focus on how local governments, universities, government agencies, and companies can stick together the soil in how to visit the site.

Time	Title and Speaker
4:00 - 4:05 pm	**Welcome Remarks //** 김영기 University of Chicago, 정병선 한국과학기술기획평가원 원장
4:05 - 4:10 pm	**Sponsor Introduction**
4:10 - 5:00 pm (25' remarks + 25' discussion)	**한국은 현재 지방 문제의 한 방안으로서 지역 특화사업 육성을 목표하고 있는데, 이런 목표 하에서 지방 자치단체, 대학, 정부 출연 연구소, 기업들이 어떻게 서로 시너지를 낼 수 있는 건강한 생태계를 만들어 낼 것인가?** • 경상국립대학교 권순기 총장 (Moderator) • 경북대학교 홍원화 총장 • UNIST 이용훈 총장 • 광주과기원 김재관 대외협력처장
5:00 - 5:50 pm (25' remarks + 25' discussion)	**지역의 연구 인력 문제, 지역 소멸 문제는 Globalization에서 일부 해답을 찾을 수가 있는데, Globalization을 추구함에 있어서 도시, 대학, 연구소, 기업들에게는 어떤 전략이 필요한가? Globalization의 관점에서 도시와 대학과의 관계는 어떻게 발전 시킬 것인가?** • 태재대학교 염재호 총장 (Moderator) • 서울대학교 김재영 연구부총장 • 아주대학교 최기주 총장 • 숙명여자대학교 장윤금 총장 • KENTECH 윤의준 총장
5:50 - 6:00 pm	**Concluding Remarks and Photo**

KSEA History Committee Forum

Reflection of KSEA History in 120 Years of Korean Immigration to the United States

August 5 _ Saturday _ 8:00am _ Developers

Chair

Chueng-Ryong Ji

North Carolina
State University

Co-Chair

Soolyeon Cho

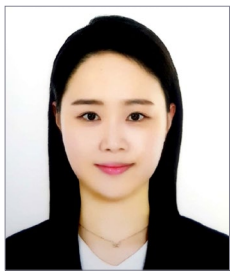
North Carolina
State University

The influence from the historical background appears indispensable in understanding the first generation of Korean-American, in particular, the inherited volunteerism that manifested in founding the KSEA a half century ago. In this forum, the KSEA history will be reflected in broader perspectives of Korean immigration to US for the last 120 years.

Time	Title and Speaker
8:00 - 8:15 am	**Welcoming Remarks and Group Photo** // Yongho Sohn, KSEA President and all participants
8:15 - 9:30 am	**Forebears of Korean Immigration** // Chueng-Ryong Ji
	Early History of Korean Students in US // Kang-Wook Lee
	What is history? // Sung-Kwon Kang
	Early Years of KSEA // Chan-Mo Park
	Academic Contributions // K. Wayne Lee
	Entrepreneurship Development, KSEA Demography // Myung Jong Lee
	Demography of Women Scientists and Engineers // Eun-Suk Seo
	ESTEEM Video Project and the 120 Years Anniversary Book // Jahae Yun
	Video Remarks from the family of the Late Professor Shoon Kyung Kim // Matt Kim and Mrs. Jeung Hi Kim
	Video Presentation of Young Generation Perspectives // Jonathan Kim and YGs
9:30 - 9:55 am	**KSEA and Collaboration Opportunities with Korean Societies including Korean American Association and Community Center (KAACC)** // Casey Youn (KAACCH President), Sam Sangsoo Ryu (ExxonMobil Shipyard Program Manager)
9:55 - 10:00 am	**Concluding Remarks** // Chueng-Ryong Ji and Soolyeon Cho

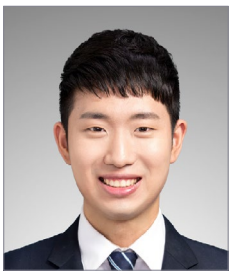
Scholarship Winners

2023 KSEA - KUSCO Graduate Scholarship Winners



Bo Ra Kim
University of Texas at Austin

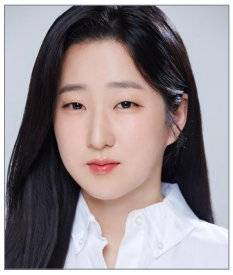
Chunghwan Kim
Arizona State University



David Ha Eun Kang
MIT

Woojung Lee
Columbia University

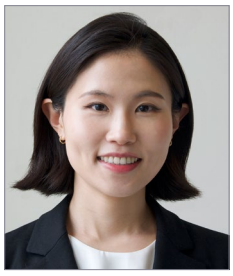
Jaehoan Kim
Texas A&M University



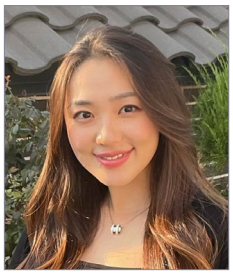
Ji-young Lee
Touro College of Pharmacy

Jinwon Oh
Stanford University

Kyeong Joo Jung
Ohio State University



Lucie Ahn
Case Western Reserve University



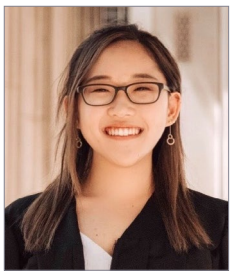
Minchae Chloe Kang
Texas A&M University

Saeyeong Jeon
University of Florida

Sanghyun Jeon
UIUC

Serin Lee
MIT

Seungri Kim
The City College of New York

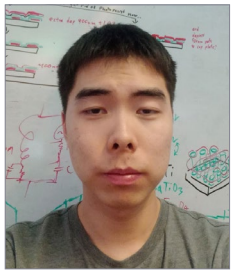


Seungweon Park
Vanderbilt University School of Medicine

Soohwan Kim
Georgia Institute of Technology

Soonmyung Hwang
Icahn School of Medicine at Mount Sinai

Taeyoon Jung
University of Washington



Ilhan Bok
University of Wisconsin-Madison

Yejin Ki
University of Pittsburgh School of Dental Medicine

UKC 2023 Sponsors

Co-Organizations

KOFST
Korean Federation of
Science & Technology Societies

KUSCO NRF
KOREA-U.S. SCIENCE COOPERATION CENTER
National Research Foundation of Korea

Platinum Sponsor

재단법인 씨젠의료재단
Seegene Medical Foundation

UKC 2023 Sponsors

Gold Sponsors

CHEY INSTITUTE FOR ADVANCED STUDIES

Keit 한국산업기술평가관리원 Korea Evaluation Institute of Industrial Technology

한국수력원자력주식회사 KOREA HYDRO & NUCLEAR POWER CO., LTD

KITECH 한국생산기술연구원

KIAT Korea Institute for Advancement of Technology

YUHAN

K water

Silver Sponsors

한양대학교 HANYANG UNIVERSITY

KBSI 한국기초과학지원연구원 KOREA BASIC SCIENCE INSTITUTE

KHIDI 한국보건산업진흥원 Korea Health Industry Development Institute

KICT 한국건설기술연구원

KIST Korea Institute of Science and Technology

KISTEP 한국과학기술기획평가원 Korea Institute of S&T Evaluation and Planning

KNU 경북대학교 KYUNGPOOK NATIONAL UNIVERSITY

beyond the best KUMHO PETROCHEMICAL

서울대학교 SEOUL NATIONAL UNIVERSITY

UCF UNIVERSITY OF CENTRAL FLORIDA

TAEJAE UNIVERSITY

UNIST 울산과학기술원 ULSAN NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY

UKC 2023 Sponsors

Bronze Sponsors

UKC 2023 Sponsors

General Sponsors

CATERPILLAR®

KFRI 한국식품연구원

KBRI 한국뇌연구원 Korea Brain Research Institute

KIOST Korea Institute of Ocean Science & Technology

KERI 한국전기연구원 Korea Electrotechnology Research Institute

KOSEN 사람을 아는 AI 지식을 얻는 기쁨

KICET 한국세라믹기술원 Korea Institute of Ceramic Engineering & Technology

NEXTRON MICRO PROBE SYSTEM

KOREA UNIVERSITY 고려대학교 KOREA UNIVERSITY

POSTECH Pohang University of Science and Technology

KASI 한국천문연구원 Korea Astronomy & Space Science Institute

한국과학우주청소년단 Young Astronauts Korea

OSCEOLA COUNTY be first. to what's next.

KAIA 국토교통과학기술진흥원

KENTECH Korea Institute of Energy Technology

WISET 한국여성과학기술인육성재단

Embassy of the Republic of Korea

FTI FUZBIEN TECHNOLOGY INSTITUTE, INC. A LEADER IN NANOBIOTECHNOLOGY

Friends of KSEA

서울아산병원 Asan Medical Center

Korean American Association Community Center of Houston

KIC Korea Innovation Center Washington DC

KFE 한국핵융합에너지연구원 Korea Institute of Fusion Energy

Springer

Media Partner

MK 매일경제 MBN

KUSCO
KOREA-U.S. SCIENCE COOPERATION CENTER

The Korea-U.S. Science Cooperation Center (KUSCO) is a non-profit organization established in Vienna, Virginia, founded in 1997, to accomplish two major missions: to enhance cooperative efforts in S&T between Korea and the U.S. and to support Korean - American scientists & engineers in the United States.

VISION & MISSION

The vision of KUSCO is *"Advancement of the S&T collaborations between Korea and the U.S."*
To realize its vision, KUSCO pursues the mission of becoming a premium center for S&T cooperation and Exchanges by pursuing three goals as follows:

- To strengthen S&T cooperation portfolio between Korea and the U.S.
- To broaden global exchange programs
- To support and leverage Korean-American scientists and engineers

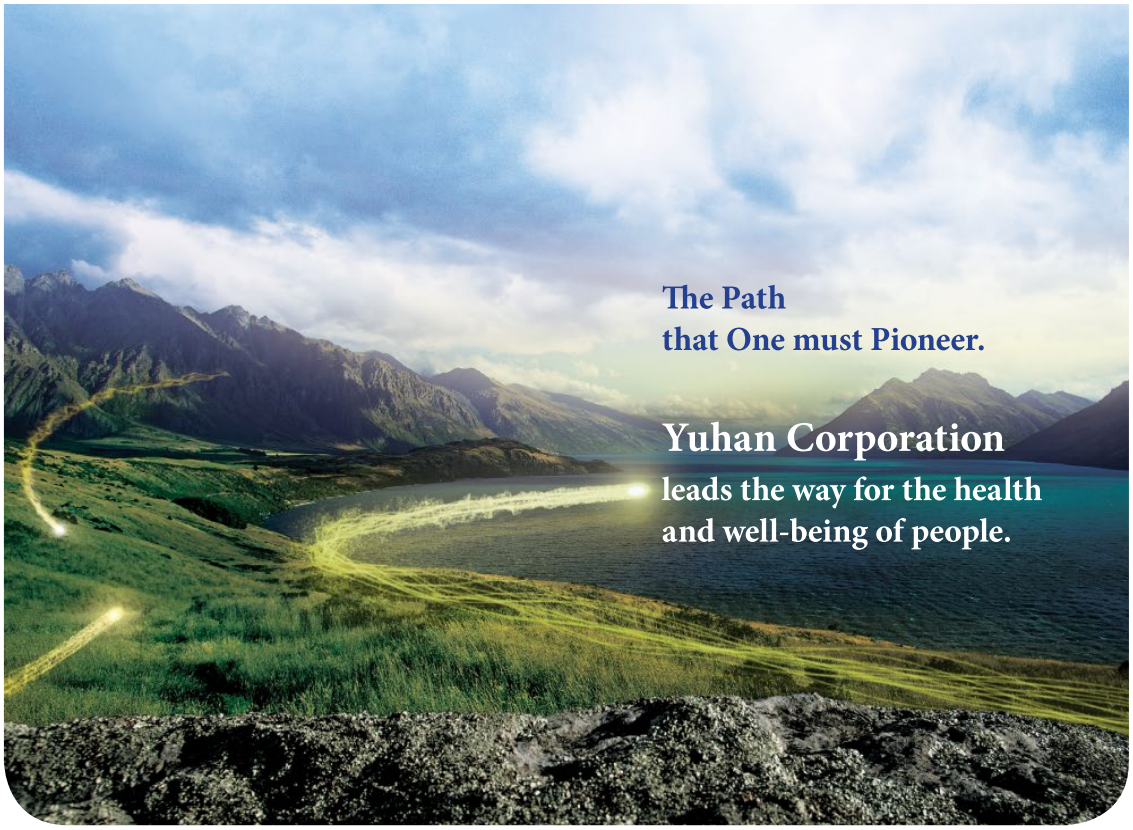
MAJOR ACTIVITIES

- Enhance scientific and technological development of both Korea and the U.S.
- Support mutual cooperation and initiate joint programs with U.S. and Korean scientific and engineering societies, academic universities, and other institutions
- Assess significant trends in scientific research and technological developments affecting Korea and the U.S.
- Assist young Korean-American and other scientists in developing and maintaining networks addressing matters of scientific and technical interest to the two countries

K-water: Linking Nature and People

World Top K-water

Ministry of Environment | K water Korea Water Resources Corporation



The Way of Yuhan

Yuhan Corporation, a group loved by the people and grown together with the people
For the last 90 years, the corporate culture of honesty and integrity,
and the strong beliefs in social responsibility are what made Yuhan what it is today.

Looking back on the path that we moved on and thinking of the path ahead,
Yuhan will make the leap as a global pharmaceutical company through innovative new drug development,
and by enabling healthiness and happiness for all the people in the world.

In the next 100 years, Yuhan Corporation will follow the noble spirit of our founder, Dr. New Ilhan,
and write the history of challenge and development moving forward.

Our challenge has already begun.

YUHAN

WELCOME TO HANYANG UNIVERSITY

UKC x Hanyang

UKC x Hanyang

Job Fair

- 방문자 : 한양대학교 총장, 교무처장(서울/ERICA), 산학협력단장, Recruiting Team
- 부스일정 : 8월 3일(목) ~ 8월 4일(금)
- 참석 프로그램
  - ✓ SEED Workshop Dinner
  - ✓ SEED Poster Session
  - ✓ SEED Teatime Session
  - ✓ Networking Dinner

Fields of Interest

- 건축공학
- 도시공학
- 화학공학
- 정보시스템
- 전기생체공학부
- 바이오메디컬
- 기계공학
- 산업공학
- 미래자동차공학
- AI
- 반도체

KBSI
KOREA BASIC SCIENCE INSTITUTE

KBSI seeks to implement customer value management(CVM) and quality management system with a set of state-of-the-art research equipment and quality workforce. Utilizing these resources, we will become a leading national institute for co-utilization of research equipment and research support.

Securement of competitiveness in analytical services

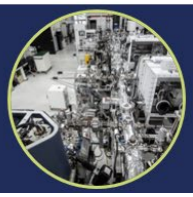
·Accumulating know-how in analytical management; developing analytical technologies; enhancing analytical performance and quality management system; and improving the operation system

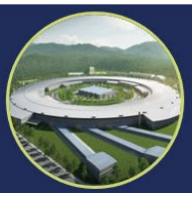
Research support for joint research involving industrial, academic, and research institutes

·Establishing open research infrastructure for convergence and cooperation Nationwide research support network

National research support network

·Establishing research infrastructure for open research convergence and cooperation





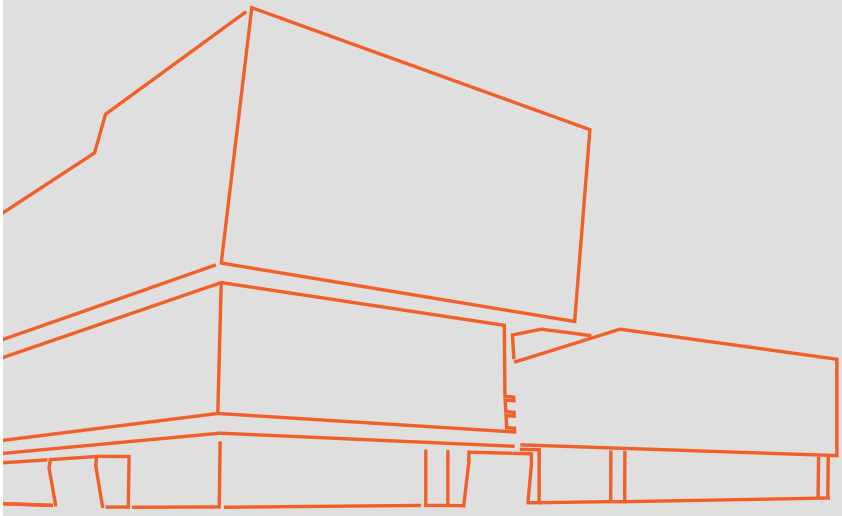
Korea Institute of Science and Technology

Korea Institute of Science and Technology (KIST)

- Korea's first government-funded research institute (established in 1966)
- Premier multi-disciplinary research institute pursuing world-class excellence
- Emphasizing convergence and open innovation across national R&D entities
- Solving national issues and providing future economic growth engines

KISTEP

과학기술 혁신정책의 Think-Tank인
한국과학기술기획평가원은 국가
R&D 전반에 걸쳐 깊이 있는 연구와
통찰력으로 미래를 준비하겠습니다!



#국가전략기술
#임무중심 R&D 혁신
#디지털 플랫폼화


2030 부산세계박람회 유치를
GS그룹이 응원합니다
에너지를 더했다
가능성을 넓혔다
급변하는 미래환경과 고객변화 속에서
에너지가 삶과 더 가까워질 순 없을까?
그래서, GS칼텍스가 시작합니다
지금과는 다른 확장된 경험과 가치를 제공하는
'에너지플러스'로
더 나은 내일을 향한 가능성을 넓힙니다
에너지에 공간가치를 더하다
고객/사회에 새로운 가치를 제공하는 에너지플러스 복합개발
에너지에 디지털을 더하다
차량 자동인식, 주유 간편결제로 편리함을 높이는 에너지플러스 모바일서비스
(비콘인식, 애플페이/네이버페이/카카오페이/페이코/제로페이 등 간편결제)
에너지에 Mobility & Life를 더하다
모빌리티 인프라와 라이프 서비스가 결합된 미래형 주유소 에너지플러스 허브
(EV충전, 수소충전, 마이크로모빌리티, 물류거점 서비스 등)
에너지에 혜택을 더하다
고객에게 차별화된 혜택을 제공하는 에너지플러스 신용카드
GS 칼텍스


성안의 고고함을 동경하지 마라. 세상은 언제나 저잣거리에서 일낸다.
멋대로
번듯한 길 한 켠에는 멋진 오솔길도 있다. 세상은 외길이 아니다.
아주대로
융합과 연결의 길 | 발견과 창조의 길 | 수평과 혁신의 길
파란학기제
"AFTER YOU"
글로벌 명문대
복수학위제
아주인은 시대의 주인입니다 - 지능형반도체공학과 | AI모빌리티공학과 | 첨단신소재공학과 신설
아주대학교

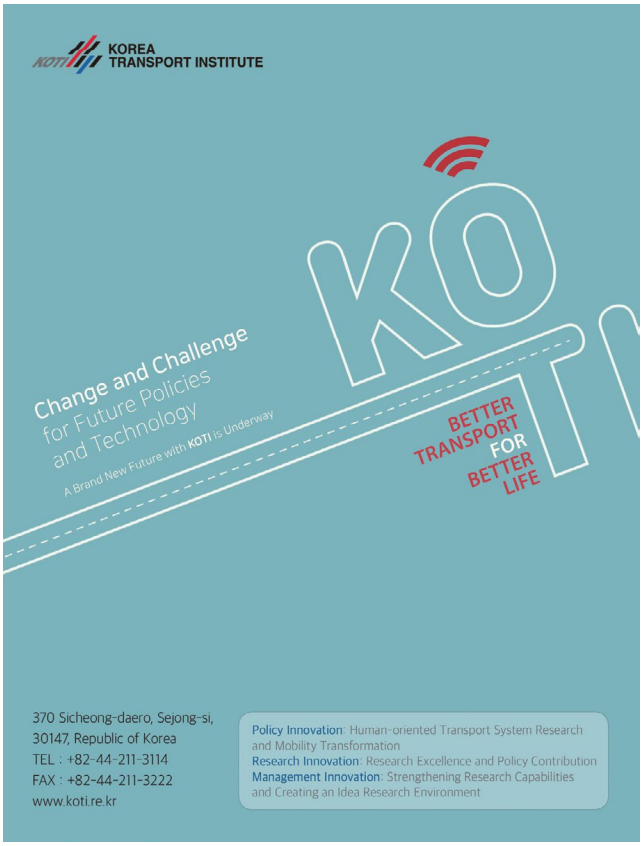

GIST 30th
Anniversary
1993-2023
2024 QS World University Rankings
for 'Citations per Faculty'
5th in the World | 1st in korea
(for 15consecutive years)
2021 QS Top 50 Under 50
30th in the World | 3rd in korea
2023 THE Young University Rankings
85th in the World | 3rd in korea
Gwangju Institute of
Science and Technology


Sustainable solutions
to advance the world
인류의 더 나은 삶과 지속가능한 미래.
우리는 기후 변화에 대응하는 글로벌 선도 기업으로
스마트한 친환경 에너지 솔루션과
고객 관점의 제품, 서비스를 통해
새로운 기회를 창출하며 인류의 행복한 삶에 기여합니다.
지속가능한 미래를 앞당기는 솔루션,
한화솔루션이 새로운 세상을 열어갑니다.
한화솔루션

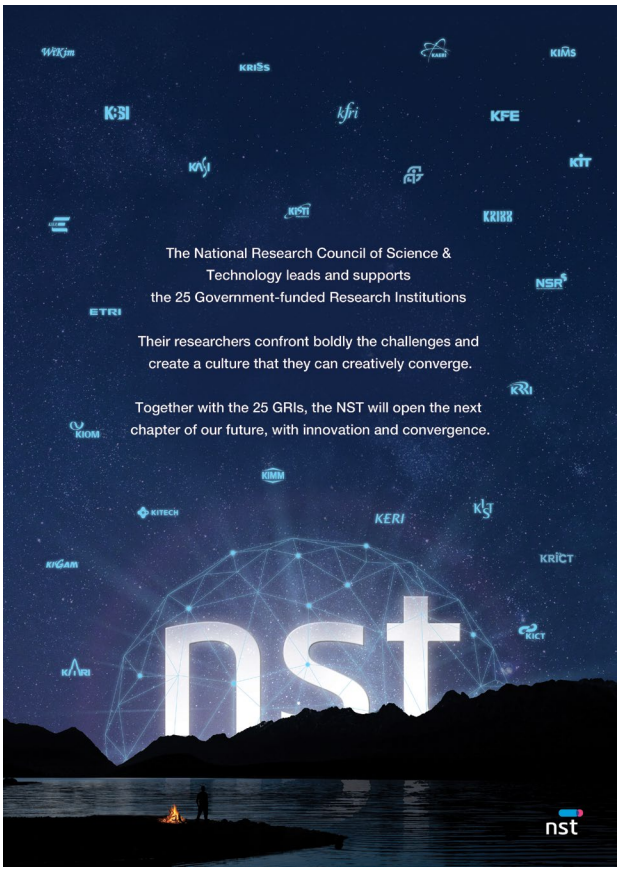

70th anniversary
in 2024
인하대학교
INHA UNIVERSITY
새로운 혁신의 출발점에 서다
1960년, 미지의 세계를 향해
로켓을 발사한 인하대의 도전을 기억합니다.
누구도 꿈꾸지 못했던 도전에 성공한 인하대학교는
지금도 새로운 미래를 준비하며
첨단분야 학과를 신설하고 융합 교육을 통해
4차 산업혁명을 이끌어갈
미래 인재를 양성하고 있습니다.
Inspiring the Future,
Innovating Together
인하, 더 높아진 가능성 위에서
시작하다
DEPARTURE
INHA University, Where Excellence Meets Opportunity


KAIST
QAIST New Culture Strategy
for the Next 50 Years of KAIST
Question
Creative Talent
Education
Talents who ask questions
Advanced Research
Post AI Research
Research
Question-defining Research
Internationalization
Global Talent
Globalization
World Bridge KAIST
Start-up
Financial Independence
Technology Commercialization
Global Value Creation
Trust
Shared Vision
Value of Trust
Building Trust
Korea Advanced Institute of Science & Technology


KENTECH
Korea Institute of Energy Technology
에너지 혁신의 무한한 상상력
We ( ) Energy
미래 에너지 산업을 주도할
차세대 기술을 연구하고 에너지 리더를 양성하는
세계 유일의 에너지 특화 대학입니다.


KOREA TRANSPORT INSTITUTE
KOTI
Change and Challenge for Future Policies and Technology
A Brand New Future with KOTI is Underway
BETTER TRANSPORT FOR BETTER LIFE
370 Sicheong-daero, Sejong-si, 30147, Republic of Korea
TEL : +82-44-211-3114
FAX : +82-44-211-3222
www.koti.re.kr
Policy Innovation: Human-oriented Transport System Research and Mobility Transformation
Research Innovation: Research Excellence and Policy Contribution
Management Innovation: Strengthening Research Capabilities and Creating an Idea Research Environment


Chemistry for US,
Chemistry for EARTH
KRICT
Towards a Sustainable Society
Chemistry is part of life, and omnipresent in the world around us.
Chemistry creates a healthy and abundant future.
Environment-friendly chemical technology
New drug biotechnology
Chemical platform technology
Cutting-edge chemical materials
Convergent new technology
KRICT 한국화학연구원
www.krict.re.kr / international@krict.re.kr


The National Research Council of Science & Technology leads and supports the 25 Government-funded Research Institutions
Their researchers confront boldly the challenges and create a culture that they can creatively converge.
Together with the 25 GRIs, the NST will open the next chapter of our future, with innovation and convergence.
nst
nst


지구를 위한 그린플루언서 SK innovation
WAVE
SK innovation
Net Zero
Green to Green!
작품명 Green Innovation
모두가 꿈꾸는 넷제로 세상,
SK이노베이션이 만들어 갑니다
Hi
SK이노베이션의 그린픽쳐
SK innovation SK energy SK geo centric SK on SK enmove SK incheon petrochem SK trading international SK ie technology SK earthon

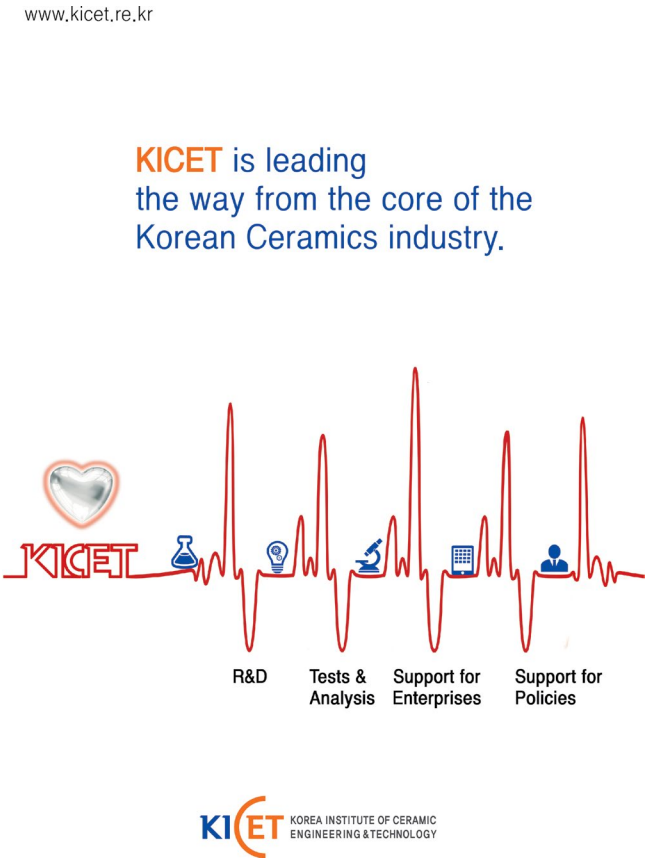

숙명여자대학교
The World's Best Digital Humanity University
Digital Convergence Innovation
Startup Incubator Innovation
ESG Practice Innovation
HOMEPAGE
YOUTUBE
INSTAGRAM

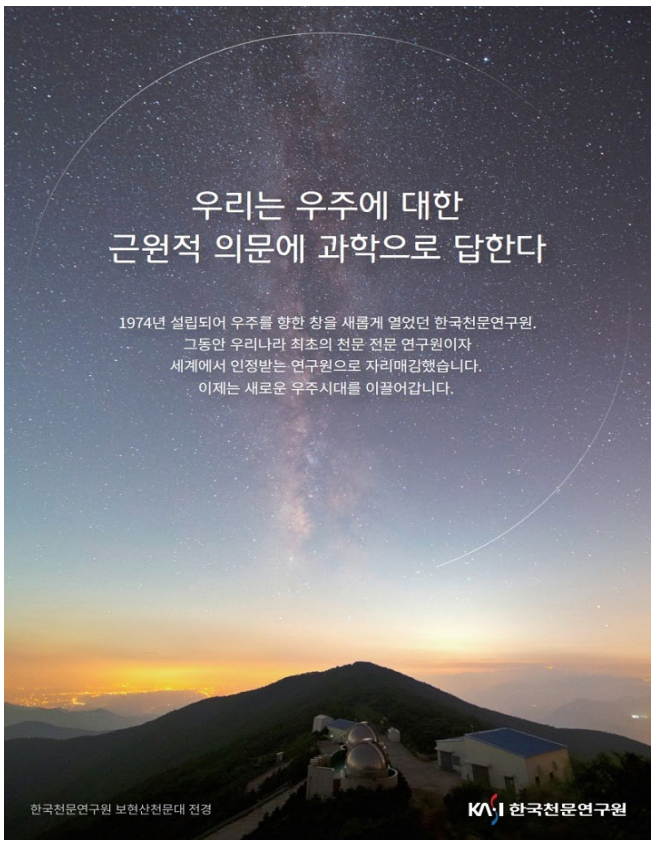

RIGET
그린에너지융합연구소
Research Institute for Green Energy Convergence Technology
HOMEPAGE
YOUTUBE
동남권 첨단소재산업 발전을 위한 글로벌 E4인력양성 사업
"첨단소재 산업 글로벌 인재 지역 안착 프로젝트"
<그린에너지융합연구소장 남상용 교수>
BK 21 Four Project
People in GNU IAM Pioneer
Energy
Electronics
Extreme
Emerging
2030 전문화된 자립연구소
2025 업합체제 연구소
2023특성화 연구소
2020 그린에너지융합연구소
GNU
경상국립대학교
중점연구소 2030로드맵


HOMEPAGE
YOUTUBE
FACEBOOK
Leading Global Brain Research
KBRI
Korea Brain Research Institute
한국뇌연구원
Korea Brain Research Institute


KERI
The Electrified World's Hub
As the only government-funded electrotechnology research institute in Korea, KERI has conducted a wide range of activities including R&D, Testing & Certifications related to electricity.
In a new era founded on a cutting-edge electrotechnology, KERI is the core.
Power Grid Smart Grid Research
Industry Applications Research
Electrical Apparatus Research
Electrical Materials Research
Electro-Medical Equipment Research
Power Semiconductor Research
Testing & Certification Services
KERI KOREA ELECTROTECHNOLOGY RESEARCH INSTITUTE

www.kicet.re.kr



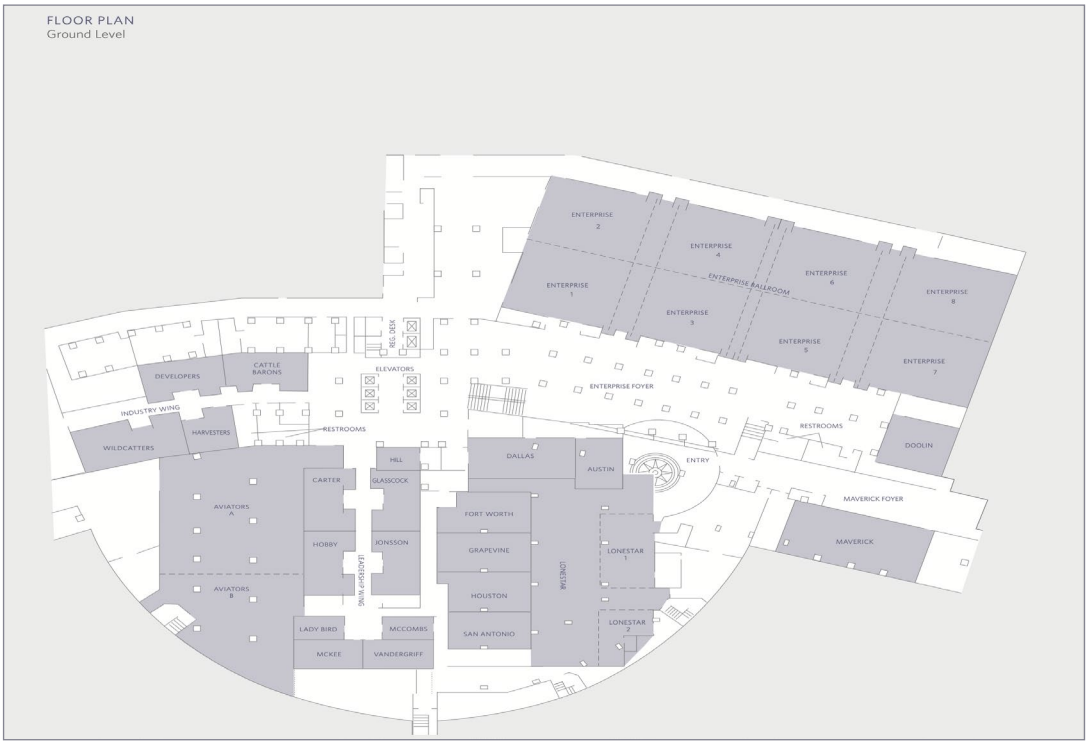

우리는 우주에 대한
근원적 의문에 과학으로 답한다
1974년 설립되어 우주를 향한 창을 새롭게 열었던 한국천문연구원.
그동안 우리나라 최초의 천문 전문 연구원이자
세계에서 인정받는 연구원으로 자리매김했습니다.
이제는 새로운 우주시대를 이끌어갑니다.
한국천문연구원 보현산천문대 전경
KASI 한국천문연구원

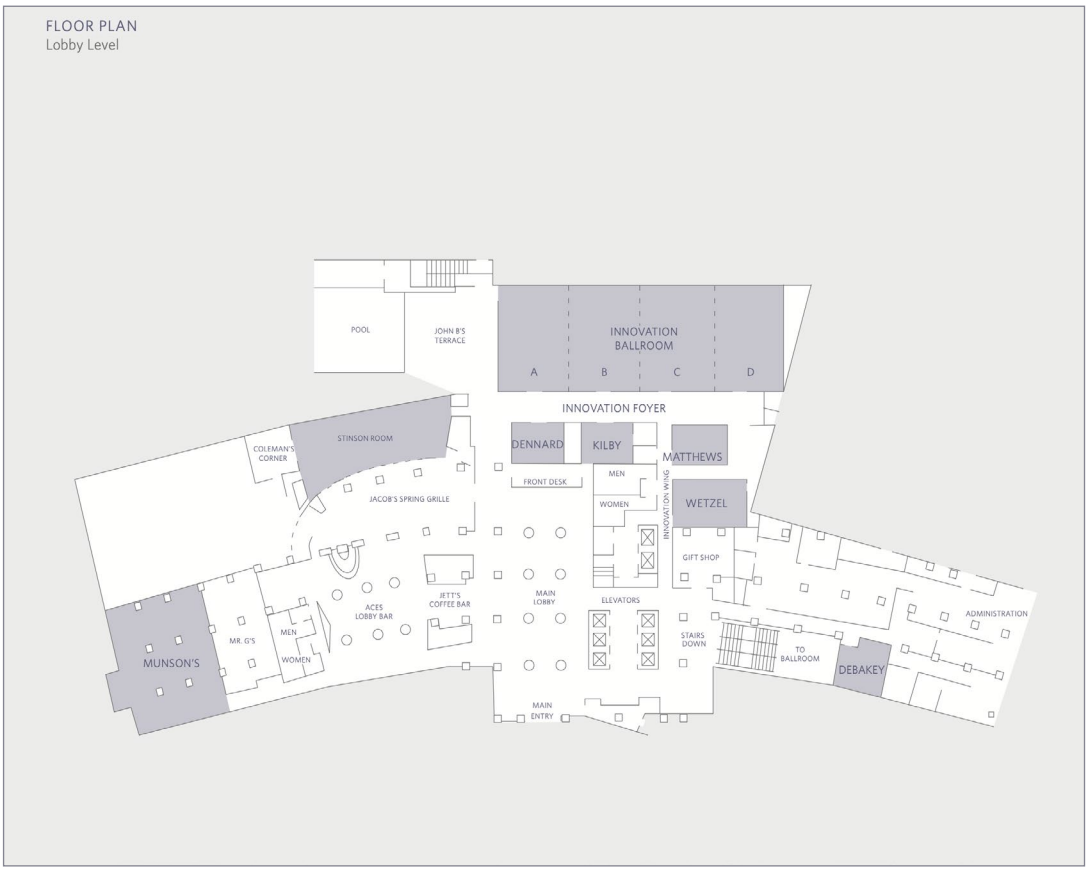

NEXTRON
MICRO PROBE SYSTEM


WISET 한국여성과학기술인육성재단
Korea Foundation for Women In Science, Engineering and Technology
DIVERSITY & INCLUSION IN STEM
Mission & Vision
MISSION
To empower women in STEM to demonstrate their strength and contribute to social value
VISION
The world's leading institution that fosters women in STEM who will take the lead in promoting science and technology-based economic growth
Main Functions
Conducting government-commissioned projects on women in STEM
Providing educational/training programs for women in STEM
Operating career development programs
Conducting policy research and analysis on women in STEM
Improving women's representation in STEM and achieving gender equality
Communicating and collaborating with domestic and international organizations
Organization History
Organization Overview
Legal basis of establishment | Article 14 of ACT ON FOSTERING AND SUPPORTING WOMEN SCIENTISTS AND TECHNICIANS
Date of establishment | April 1, 2013
Affiliated organization of the Ministry of Science and ICT
Jan. 2011
Establishment of Center for Women in Science, Engineering and Technology
Jan. 2013
WISET established as a non-profit organization (Director Haisook Lee)
May 2013
Launching Center for Science, Engineering, and Technology Cooperatives (by Ministry of Science and ICT)
Aug. 2014
Launching Seoul Job Center for Women in Science, Engineering, and Technology & Expansion and relocation of WISET Academy (by Ministry of Gender Equality and Family)
Nov. 2022
Ahee Moon inaugurated as 4th President of WISET
June. 2021
Changed the name of the organization to Korea Foundation for Women In Science, Engineering and Technology
Jan. 2017
WISET designated as a public organization
WISET


UKC 2023 Dallas
"누리호 발사 성공을 축하드립니다."
"Congratulations on the successful launch of the Nuri"
www.yak.or.kr
한국과학우주청소년단
Young Astronauts Korea

Conference Venue Map





The Hyatt Regency DFW

2334 N International Pkwy, Dallas, TX 75261
(972) 453-1234

Discovery, Innovation and Dissemination for Transformative Impact

UKC 2023
US-KOREA CONFERENCE

Korean-American Scientists and Engineers Association
1952 Gallows Road, Suite 300, Vienna, VA 22182
Tel. 703-748-1221. Fax. 703-748-1331
sejong@ksea.org
www.ksea.org

Front cover image - Freepik.com.
This cover has been designed using assets from Freepik.com