

*"Issue-Resolution for Research and  
Developments"*

# KSEA NWRC 2024



January 27 - 28, 2024

Boise State University / ILC(Interactive Learning Center)

Boise, Idaho

This conference is organized and sponsored by:

KSEA Idaho Chapter

KSEA Seattle Washington Chapter

KSEA Sacramento Chapter

Korean-American Scientists and Engineers Association (KSEA)

Korea-U.S. Science Cooperation Center (KUSCO)

Boise State University

**Welcoming Remarks from the KSEA 52th President**



Dear colleagues and distinguished guests: Greetings!

I am delighted to extend a heartfelt welcome to each one of you as we gather for 2024 Northwest Regional Conference of the Korean American Scientists and Engineers Association (KSEA). This is a very special event to celebrate the remarkable contributions in the fields of science, engineering and to promotion. The Northwest region has witnessed the growth, resilience and achievements of many Korean-Americans, and it serves as a testament to the strength that diversity brings to our shared narrative. Boise, the venue of the conference, is of course well known as one of the fastest growing cities in the US. Its growth is based on technology and industry. As the president of KSEA, I'm very honored to lead a community that is at the forefront of scientific and engineering achievements. Our collective efforts have not only shaped the landscape of the northwest region of the US, but have also contributed significantly to the global scientific community. I am very sure that this conference will provide a unique opportunity to share experiences and forge collaborations that will lead to groundbreaking advancements in our respective fields and, of course, good friendships. I encourage each one of you to actively participate in discussions, engage with fellow professionals, and leverage this platform to foster meaningful connections. Let's use this conference as a springboard to propel our community further into scientific and technological excellence. Together, we can inspire the next generation breaking new ground and continue to make lasting contributions.

I extend my deepest gratitude to all the attendees and supporters who had made this conference possible. A very, very special thanks goes to Professor Byung Kim of Boise State University and Professor Jae Hyeon Ryu from University of Idaho, who also happens to be the candidate for KSEA President-elect in the upcoming election, starting in March. Best Wishes! Your commitment to advancing knowledge and fostering collaboration is truly commendable. I am very confident the 2024 Northwest Regional Conference will be a success, leaving an unforgettable mark in your career and on the journey of KSEA.

Welcome to the weekend of inspiration, collaboration and celebration. Thank you!

Yongho Sohn, Ph.D.  
52th President  
KSEA

## Welcoming Remarks from NWRC 2024 Chair



Dear 2024 KSEA NWRC participants: Welcome to the KSEA NWRC 2024!

The local chapters of the Korean American Scientists and Engineers Association (KSEA) in the northwest states (California, Idaho, Washington) will host the Northwest Regional Conference (NWRC) 2024 in Boise, Idaho, January 27 – 28, 2024. The theme of the 37th US-Korea Conference (UKC) 2024 is "The Next Era of Science, Technology and Entrepreneurship with Artificial Intelligence." We will introduce "Issue-Resolution for Research and Developments" at the NWRC 2024 to enhance the theme.

We are inviting recognized researchers and engineers in various research areas covered in the NWRC 2024. Many professionals who work in STEM will come from across the states. This will also be a great opportunity for the KSEA members to meet new people and exchange their ideas around their work and research areas. We also stress the intangible skills needed to further develop careers, communicate, and do business with other cultures worldwide.

Throughout the conference, participants will have opportunities to exchange research topics, their achievements, and recent technology trends as well as expanding their research network. This in turn can help US-based KSEA members find potential collaborators in the fields.

Byung Kim, Ph.D.

Chair, NWRC 2024

KSEA Idaho Chapter President

## Keynote Speaker



**Harold Kim** is a Professor of Physics at Georgia Institute of Technology. He received his BS in physics from KAIST, South Korea, and his PhD from Stanford University under the supervision of Steven Chu with a thesis entitled “single-molecule studies of dynamic biological processes.” He then did postdoctoral research on quantitative gene expression in budding yeast with Erin O’Shea at Harvard University. In 2010, he joined the physics faculty at Georgia Tech. His NSF- and NIH-funded research has focused on the extreme mechanics of DNA, which underlies packaging, regulation, and repair of the genome inside the cell. Since 2012, he has been a core faculty member of the NSF-funded Physics of Living Systems (PoLS) student research network. The Grigorio Weber International Prize in Biological Fluorescence (2005) and the Burroughs Wellcome Fund Career Award at the Scientific Interface (2007) are among his honors.

### Probing the Anisotropic Bendability of DNA

We want to understand how DNA, the stuff that makes up our genes, bends and twists. Double-stranded DNA isn't perfectly straight; it has an uneven helical shape with grooves of varying widths. This inherent asymmetry suggests that DNA doesn't bend uniformly in all directions. However, measuring this anisotropic bendability is challenging. So, we came up with a way to study this. We design two short DNA segments containing two identical three-letter codes positioned one helical turn apart in either the same or opposite orientations. Comparing the looping speeds of these different DNA segments can tell us about the anisotropic bendability of the three-letter code. We discovered that most three-letter codes exhibit anisotropic bendability, but this varies depending on the specific code and whether the code contains errors. To confirm our findings, we compared our experimental results with predictions from computer simulations. Our research sheds light on how DNA behaves mechanically on an extremely small scale.

## Saturday, 1/27/2024

Time	Session (room)	Moderator	Speaker/Event
02:30 pm - 03:00 pm	Registration (4 <sup>th</sup> floor at Interactive Learning Center)	Nao Roh, YG Event officer of KSEA Seattle (Google) Seoyoung (Erina) Kim, YG Event officer of KSEA Seattle, Business Analyst	
03:00 pm - 3:30 pm	Welcome Remarks (ILC402)	Byung Kim, NWRC chair	Yongho Sohn (KSEA 52 <sup>th</sup> President)
03:30 pm - 4:00 pm	Keynote Speech	Jae Hyeon Ryu, Program chair	Harold Kim (Georgia Tech)
04:00 pm - 04:30 pm	Group photo and Break	Dahyeon(Dani) Kang, YG Event officer of KSEA Seattle, Research Fellow at University of Washington School of Medicine	
04:30 pm - 6:10 pm	General Technical Session (IRST and IRES)	Steve J. Lee, Sacramento Chapter John Lee, Seattle Washington Chapter	
06:10 pm - 06:30 pm	Poster Session	Andy Kim, Publication Director of KSEA Seattle (Bellevue Dermatology clinic)	
07:00 pm - 09:00 pm	Welcome reception (Cottonwood Grille)	Byung Kim, NWRC chair	

## Sunday, 1/28/2024

08:00 am - 09:00 am	<b>Breakfast and Networking</b>  <b>Elmer's Restaurant: 1385 S Capitol Blvd Boise, ID 83706</b>		
09:00 am - 11:30 am	Committee Meeting for the next NWRC		Organization Committee
11:30am	Adjourn		

Welcome/Congratulatory Remarks



Moderator: Byung Kim, Conference Chair

03:00 - 3:30 pm -**Yongho Sohn**

President of 52th KSEA

## **Keynote Speech**

Moderator: Jae Hyeon Ryu, Program chair

03:30 - 04:00 pm – **Harold Kim**

School of Physics, Georgia Institute of Technology

“Probing the Anisotropic Bendability of DNA”

**Issue-Resolution in Science and Technology (IRST)- Biology, Life Science, Physical Sciences, Information Technology, and Nanotechnology (Room: ILC402)**

Moderator: John Lee, Seattle Washington Chapter

04:30 - 04:50 pm - **Allon Kim** (Disney)

Officer of KSEA Seattle Chapter

"Generative AI current trends"

04:50 - 05:10 pm - **JeungHoon Lee**

Boise State University

"Exciton Delocalization in DNA-Templated Dye Aggregates”

05:10 - 05:30 pm – **Kyungduk Ko**

Boise State University

"Interval Estimation of Means Robust to Skewed Long Memory Data”

**(IRES)- Civil and Transportation Engineering, Electrical Engineering, Computer Engineering, Mechanical Engineering, Environment Engineering and Startup experiences (ILC402)**

Moderator: Steve J. Lee, Caltrans (Sacramento chapter)

05:30 - 05:50 pm - **Sukyong Yun**

YG President of KSEA Seattle Chapter (Pacific Northwest National Laboratory)

"Estuarine nutrient pollution impact reduction assessment through euphotic zone avoidance/bypass considerations."

05:50 - 06:10 pm - **Kyeong Sik Park**

Inha Technology College

“Development of GNSS-based Buoy-type Automatic Water Level Measurement Device”

**Poster Presentation:** 06:10 pm - 06:30 pm

Moderator: Andy Kim, Publication Director of KSEA Seattle (Bellevue Dermatology clinic)

**Hoyoon Song and Byung Kim**

Department of Physics, Boise State University

“Development of an Arduino-Based COIFM Controller”

**Ayden Ouckama and Byung Kim**

Department of Physics, Boise State University

“Design of a Novel, Inexpensive COIFM Using the DVD Optical Pickup Unit for Nanoscale Water Researches”



**Conference Chair:** Byung Kim, Boise State University

**Program Chair:** Jae Hyeon Ryu, Univ. of Idaho

**Technical Program Chairs/Poster Coordinators:**

- Issue-Resolution in Science and Technology (IRST)- Biology, Life Science, Physical Sciences, Information Technology, and Nanotechnology:  
John Lee, Seattle Washington Chapter
- Issue-Resolution in Engineering and Startup experiences (IRES)- Civil and Transportation Engineering, Electrical Engineering, Computer Engineering, Mechanical Engineering, Environment Engineering and Startup experiences:  
Steve J. Lee, Sacramento Chapter
- Poster Session: Andy Kim, Publication Director of KSEA Seattle (Bellevue Dermatology clinic)

**Local Arrangements Committee:**

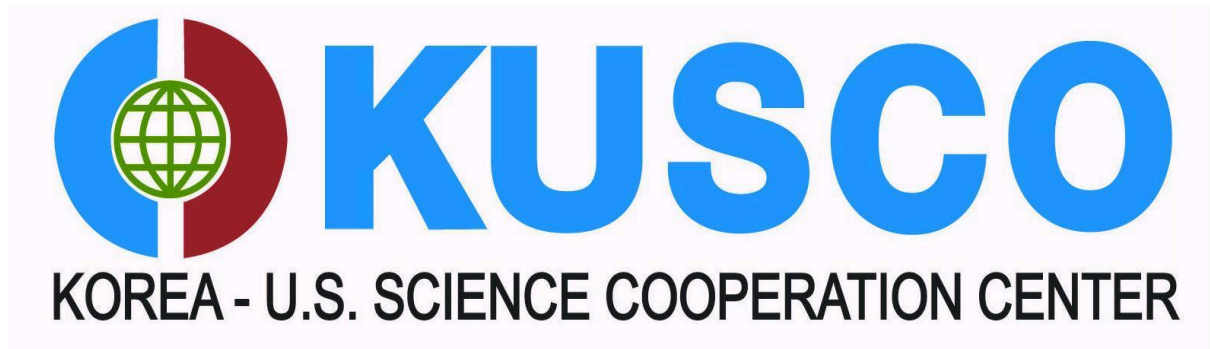
- Refreshment Arrangements: Teachers at Idaho Korean School
- Event Facilitator: Hyuntae Kim, ON Semiconductor
- Event Recording: Kangyong Kim, Micron Technology
- Transportation Arrangements: Jongsoo Jeong, Micron Technology

**Local Chapter President/Representatives**

- Byung I. Kim: Idaho Chapter
- John Lee: Seattle Washington Chapter
- Steve J. Lee: Sacramento California

## Conference Sponsors

1952 Gallows Rd. Suite 202 Vienna, VA 22182



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**BOISE STATE  
UNIVERSITY**

1910 University Dr. Boise, ID 83725

### Direction from Hotel to Conference location

**Hotel: TownePlace Suites Boise Downtown/University**

1455 S Capitol Blvd, Boise, ID 83706

Duration of Stay: January 27 - January 28 (1 Night)

**Conference location: Interactive Learning Center ILC402,ILC403 and ILC404**  
(Boise State University)

Address: 2120 W University Dr, Boise, ID 83725