

Basic Sciences

This cluster highlights foundational research in physics, chemistry, mathematics, and other core sciences that drive fundamental discoveries and enable technological breakthroughs across disciplines.

The Basic Sciences Technical Symposium will feature three podium sessions and a poster session. We invite researchers and professionals from diverse scientific backgrounds to participate, share their latest work, and engage in vibrant discussions that foster new ideas and interdisciplinary connections.

This symposium is jointly organized by three Technical Groups (TGs) of KSEA and their affiliated professional societies (APS): Physics; Chemistry; and Mathematics, Geology, Meteorology, and Statistics.

The Physics (A-1 PHY) TG represents a community advancing theoretical, experimental, and applied physics, with work spanning fundamental studies of matter, energy, and the universe, as well as interdisciplinary areas connected to emerging scientific and technological frontiers.

The Chemistry (A-2 CHM) TG brings together scientists whose work advances molecular understanding and chemical innovation across diverse domains, including materials, biological systems, energy, photonics, and other interdisciplinary areas.

The Mathematics, Geology, Meteorology, and Statistics (A-3 MAS) TG includes researchers contributing to quantitative and earth-system sciences through theoretical development and practical applications in modeling, prediction, data analysis, environmental systems, and quantitative methods that support scientific decision-making.

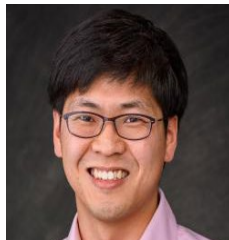
Chairs



Harold Kim

Georgia Institute of
Technology

Co-chair



Bumjung Kim

New Jersey City
University



Soeun Kim

Azusa Pacific
University

Basic Science

@Colonial B

Thursday, Aug 6 5:00 – 6:45pm

CHM Session: Frontiers in Analytical Chemistry: Spatiotemporal Resolution, Molecular Insights, and Structural Control

Moderator: Bumjung Kim (Kean University)

Time	Title and Speaker
5:00	Modeling secondary organic aerosol formation from atmospheric process of wildfire smoke: Chamber experiments to air quality simulations Myoseon Jang (University of Florida)
5:17	In Situ Raman Spectroscopy Reveals Bacterial Viability and Colony Growth Dynamics Kaeul Lim (Purdue University)
5:35	Fluorogenic Covalent Probes for RNA via 2'-OH-Selective Acylation Jinwoo Shin (Stanford University)
5:53	Complexation-Mediated Diffusion-Limited Crystal Growth: A General Framework for Anisotropic Crystal Growth Youngjong Kang (Hanyang University)
6:10	Accelerating Materials Characterization Using 4D-STEM and Data Analytics Honggye Kim (University of Florida)
6:27	Ultrafast Phase Transformation Studies using X-ray Free-Electron Lasers Hyunjung Kim (Sogang University)

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Friday, Aug 7 3:15 – 5:00pm

PHY Session: Investigating Nature Across Scales in the Physical Sciences

Moderator: Harold Kim (Georgia Institute of Technology)

Time	Title and Speaker
3:15	Purely GHZ-like Entanglement is Forbidden in Holography Monica Kang (Invited Speaker, Texas A&M University)
3:35	Light-Front Helicity Chueng Ji (North Carolina State University)
3:52	Search for Associated Production of a Higgs Boson and Two Vector Bosons via Vector Boson Scattering Philip Chang (University of Florida)

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Time	Title and Speaker
4:09	Coherent Terahertz Radiation from Laser-Wakefield Acceleration Ki-Yong Kim (University of Maryland)
4:26	How molybdenum disulfide (MoS₂) modulates actin assembly dynamics and fibroblast cell viability Ellen Kang (University of Central Florida)
4:43	Poloidal Dynamics of DNA Minicircles Harold Kim (Georgia Institute of Technology)