

IT, Quantum & Semiconductors

This cluster brings together leaders in computing, information technologies, quantum science, and semiconductor systems to highlight breakthroughs that are shaping the future of artificial intelligence, digital infrastructure, intelligent devices, and next-generation computing.

The **IT, Quantum & Semiconductors Technical Symposium** will feature three podium sessions and one poster session. We invite researchers and professionals from academia, industry, and government laboratories to share advances spanning computer science, information technology, artificial intelligence, data science, quantum technologies, semiconductor devices and systems, computing hardware, communications, cybersecurity, software systems, and related emerging areas. The symposium aims to foster interdisciplinary discussions and new collaborations across computing, electronics, quantum engineering, and digital innovation. This symposium is jointly organized by two Technical Groups (TGs) of KSEA and their affiliated professional societies (APS): Electrical and Computer Engineering; and Computer and Information Sciences.

The **Electrical and Computer Engineering TG (C-6 ECE)** includes members working across electrical engineering, computer engineering, semiconductors, quantum technology, circuits, systems, communications, computing hardware, signal processing, intelligent devices, and related emerging technologies. The group promotes innovations that advance electronics, information systems, semiconductor platforms, and next-generation computing technologies.

The **Computer and Information Sciences TG (C-7 CIT)** connects researchers and professionals working in computer science, information technology, artificial intelligence, IoT, data science, software systems, cybersecurity, connected technologies, human-centered systems, and emerging digital innovations. The group supports advances in computation, intelligent systems, secure and connected infrastructure, and data-driven technologies that shape research, industry, and society.

Supporting contributions are provided by related KSEA Technical Groups, including **Materials Science and Engineering, Nanotechnology (C-4 MSE)** in electronic, quantum, and functional materials; **Industrial, Manufacturing, and Systems Engineering (C-8 IMD)** in AI-enabled manufacturing, optimization, and industrial systems; and **Physics (A-1 PHY)** in quantum science, photonics, and fundamental physical platforms that support emerging quantum and semiconductor technologies.

Chair



Mingon Kang

University of Nevada,
Las Vegas

Co-chairs



Sam Chung

City University of
Seattle



Jungkwun Kim

University of North
Texas

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@Augusta A

Thursday, Aug 6 5:00 – 6:45pm

Session 1: Next-Generation Computing & Intelligence

Chair: Mingon Kang (University of Nevada, Las Vegas), Sam Chung (City University of Seattle), Jungkwun Kim (University of North Texas)

Time	Title and Speaker
5:00	Member introduction
5:10	An Artificial-Intelligence Agent Framework for Intelligent Livingcare Services at Smart Home Jaehoon Jeong (Sungkyunkwan University) Invited
5:30	A Large Language Model-Based Analysis for Identifying Mold-Related Issues in Buildings San Jin (The University of Texas at Arlington)
5:45	Topological Patching for Time Series Forecasting: A Noise-Immune Transformer Framework Hyeonkyu Kim (Arizona State University)
6:00	Towards Efficient and Context-Aware KV Cache Management for Long-Context LLMs Gyuwan Kim (University of California, Santa Barbara)
6:15	All-in-One Wearable Bioelectronics for a Continuous Assessment and Early Diagnosis of Acute Kidney Injury Yeo, W. Hong (Georgia Tech)
6:30	Elevator Talks

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Friday, Aug 7 3:15 – 5:00pm

Session 2: Advanced Materials & Quantum Physics

Chair: Mingon Kang (University of Nevada, Las Vegas), Sam Chung (City University of Seattle), Jungkwun Kim (University of North Texas)

Time	Title and Speaker
3:15	Member introduction
3:25	Novel framework for non-equilibrium quantum physics Jong Yeon Lee (University of Illinois at Urbana-Champaign) Invited
3:45	Radiation Effects on DDR4 DRAM Under Cryogenic Conditions: Temperature-Dependent Analysis with Proton and Gamma-Ray Jungsik, Kim (Gyeongsang National University)
4:00	Electric-Field-Driven Quantum Control of Exciton Motion in Semiconducting Carbon Nanotubes Dong Yoon Shin (University of Maryland)
4:15	Metal-Insulator-Metal (MIM) Diode with Different Work Function Metals Jeongwon Park (University of Nevada Reno)
4:30	Silicon/Glass Interposer Metrology and Inspection by Shadowgraphy Chabum Lee (Texas A&M University)
4:45	Emission from Isolated Organic Chromophores within a Metallocene Single Crystal Bumsu Lee (Southern Illinois University-Carbondale)

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Saturday, Aug 8 8:00 – 10:00am

Session 3: Hardware Architecture & Future MEMS

Chair: Mingon Kang (University of Nevada, Las Vegas), Sam Chung (City University of Seattle), Jungkwun Kim (University of North Texas)

Time	Title and Speaker
8:00	Member introduction
8:05	Liquid Metal Based Flexible Metamaterials and Sensors Jeong Bong Lee (Baylor University) Invited
8:25	Meta-Interconnect: A Metaconductor-Based Interconnect for Energy-Efficient AI Infrastructure Saeyeong Jeon (University of Florida) Invited
8:45	HIGH-Q 3D MICROPILLAR FREQUENCY-SELECTIVE DEVICES FOR LOW-LOSS TERAHERTZ BANDPASS FILTERING Jungkwun Kim (University of North Texas)
9:00	Multiphysics Analysis of Architecture-Dependent Variability in Valence-Change Resistive Memory Yongwoo Kwon (Hongik University)
9:15	AIN MEMS Oscillators Operating in Harsh Environment Jaesung Lee (University of Central Florida)
9:30	Atmospheric Pressure Plasma Deposition for High-Performance PVDF-Based Piezoelectric Nanogenerator Choonsang Park (Milligan University)

Poster Session

@ International
Ballroom II

Friday, Aug 7 5:00 – 6:45pm

IT, Quantum & Semiconductors Poster Session

Chair: Mingon Kang (University of Nevada, Las Vegas), Sam Chung (City University of Seattle), Jungkwun Kim (University of North Texas)

P1	On the Phase of Autocorrelation for Initializing Fourier Phase Retrieval DongHun Ryu (MIT)
P2	Toward the Quantum Simulation and Computing Platform of Ultracold Quantum Gases of Polar Molecules Sungjun Lee (Pohang University of Science and Technology)
P3	Air-Hermetic Wafer-Level Packaging for High-Power RF MMICs Jongmin Yook (KETI, Korea Electronics Technology Institute)
P4	Research Trends in LLM-Based Code Generation Uisang Lee (Seoul National University)
P5	Mode conversion of hyperbolic phonon polaritons in van der Waals terraces Byung-II Noh (Auburn University)
P6	How Data Centers Stream Videos Edward Hong (Independent Researcher)
P7	End-to-End Computer Vision Pipeline for Perforation Defect Detection and Classification in Industrial Imaging Joanne Yun (University of Wisconsin-Madison)
P8	Comparative Analysis of ARIMA, LSTM, Transformer, and Prophet Models for Stock Price Forecasting Jiyeon Moon (Queen Mary University of London)
P9	Fully Optical Synaptic Operations Enabled by Wavelength-Tunable Wafer-Scale PtSe₂ Layers Sang Sub Han (Korea Basic Science Institute)
P10	A Low Loss RF Conductor Using Cu/Co Multilayer Metaconductor for W Band Applications Hanna Jang (University of Florida)
P11	IGZO-Based Neuromorphic System for Spiking Neural Networks Yumin Yun (Seoul National University)
P12	Experiential Learning for non-STEM Major Students' Computational Thinking Through AI-Enabled Website Development with No Coding Sehee Ha (City University of Seattle)
P13	Dry Metal-Assisted Chemical Etching (MACE) for Black Silicon Fabrication Taeyon Kwon (University of Florida)