

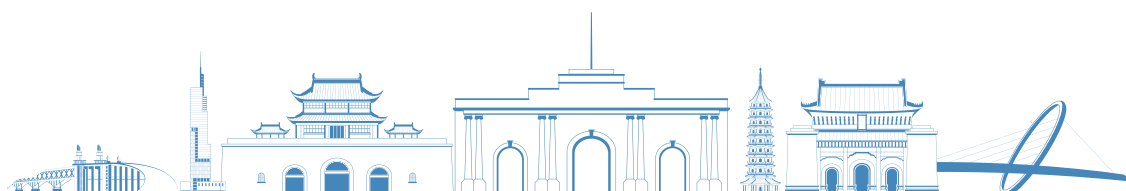
THE 26TH IEEE INTERNATIONAL CONFERENCE ON NANOTECHNOLOGY

July 5-8, 2026 Nanjing, China

CONFERENCE PROGRAM



The 26th IEEE International Conference on Nanotechnology



IEEE-NANO 2026

5 - 8 July 2026, Nanjing, China

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WELCOME

On behalf of the Organizing Committee, it is our great pleasure to welcome you to the 26th IEEE International Conference on Nanotechnology (IEEE-NANO 2026), which is held in Nanjing, China, from 5–8 July 2026.

As the flagship conference of the IEEE Nanotechnology Council, IEEE-NANO has established itself as one of the world's premier forums for the presentation and discussion of advances in nanoscience and nanotechnology. The conference brings together researchers, engineers, industry leaders, entrepreneurs, and students worldwide to exchange ideas, share recent achievements, and explore emerging opportunities across a broad spectrum of nanotechnology-related disciplines.

IEEE-NANO 2026 will feature an exciting technical program, including plenary and keynote speeches by distinguished experts, special sessions, technical sessions, tutorials, industry activities, and networking opportunities. The conference aims to foster interdisciplinary collaboration and inspire innovative solutions to scientific and technological challenges at the nanoscale.

We are delighted to host IEEE-NANO 2026 in Nanjing, a city renowned for its rich cultural heritage, academic excellence, and rapidly growing innovation ecosystem. As one of China's leading centers for science, technology, and higher education, Nanjing provides an ideal setting for international exchange and collaboration.

We would like to express our sincere gratitude to all authors, speakers, reviewers, exhibitors, volunteers, and participants for their invaluable contributions and support. Your engagement and dedication are essential to the success of this conference and to the continued advancement of the global nanotechnology community.

We wish you a stimulating, productive, and memorable experience at IEEE-NANO 2026 Nanjing.

Xinran Wang

Nanjing University, China
General Chair

Weiqiang Liu

Nanjing University of Aeronautics
and Astronautics, China
Program Chair

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TECHNICAL PROGRAM COMMITTEE

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CONFERENCE COMMITTEE

Track 3: Nanofabrication

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Chair:

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University

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Track 5: Spintronics

Chair:

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Track 6: Nanoelectronics

Chair:

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Science and Technology

Co-Chair:

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Track 8: Nano-Materials

Chair:

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Track 9: Nano-Metrology and Characterization

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de Lausanne

Co-Chair:

Gongxin Li
Jiangnan University

Track 10: Modeling and Simulation

Chair:

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Kepler Computing Inc

Co-Chair:

Luiz Felipe Aguirsky
University of Glasgow

Track 11: Nanopackaging

Chair:

Attila Bonyár
Budapest University of
Technology and Economics

Co-Chair:

Markondeyaraj Pulugurtha
Florida International
University

Track 12: Nanomagnetism

Chair:

Dustin Gilbert
University of Tennessee

Co-Chair:

Michelle Jamer
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CONFERENCE COMMITTEE

Track 13: Nano-Energy, Environment and Safety

Chair:

Zheng Fan
University of Houston

Co-Chairs:

Zhan Yang
Soochow University

Kwun Nam Hui
University of Macau

Track 14: Nanoscale Communications

Chair:

Lin Lin
Tongji University

Co-Chair:

Adam Noel
Memorial University

Track 15: Nano-acoustic Devices, Processes and Materials

Chair:

Jim Spicer
The Johns Hopkins University

Co-Chair:

Oluwaseyi Balogun
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Track 16: Quantum, Neuromorphic, and Unconventional Computing

Chair:

Giovanni Finocchio
Universita' degli Studi di Messina

Track 17: Emerging Plasma Nanotechnologies

Chair:

Masaharu Shiratani
Kyushu University

Co-Chairs:

Peter Ventzek
Tokyo Electron America, Inc.

Tatsuru Shirafuji
Osaka Metropolitan University

Track 18: Nanotechnology for Soft Electronics

Chair:

Yong Zhu
North Carolina State University

Co-Chair:

Cunjiang Yu
University of Illinois Urbana-Champaign

Track 19: Heterogeneous Integration and Chiplets

Chair:

Maitreyee Mukherjee-Roy
IBM Research

Co-Chair:

Pedram Khalili
Northwestern University

Track 20: Nanomechanics

Chair:

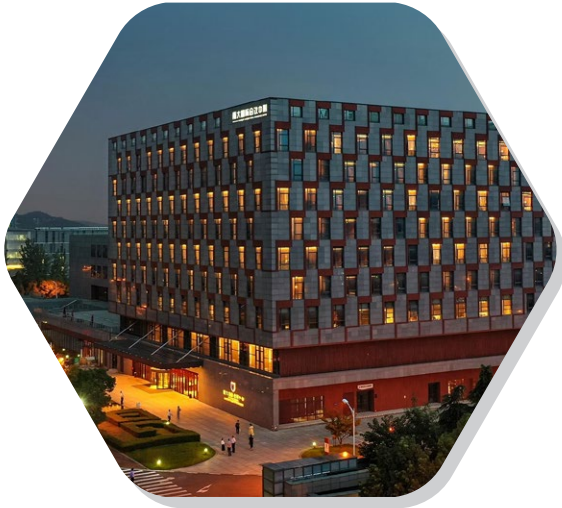
Jianying He
Norwegian University of
Science and Technology

Co-Chairs:

Yufeng Guo
Nanjing University of
Aeronautics and Astronautics

Yu Zou
University of Toronto

CONFERENCE VENUE



Nanjing University International Conference Center (NUICC)

南京大学国际会议中心

Address: Nanjing University International Conference
Center 163 Xianlin Avenue, Nanjing, China

Transportation

 Nanjing Metro Line 2
Nanjing University Xianlin Campus

 30 mins to Nanjing Railway Station
45 mins to Nanjing South Railway Station
60 mins to Nanjing Lukou International Airport

Reminder

- ▶ Your punctual arrival and active involvement in each session will be highly appreciated.
 - Get your presentation PPT or PDF files prepared and backed up.
- ▶ Laptops, projector & screen, laser pointer will be provided by the conference organizer.
- ▶ Please ensure that you take your belongings with you at all times when leaving a room. Do not leave bags or laptops unattended.

 **Emergency Phone Number: 02589685120**

 **University Health Center: 02589680163**

FLOOR PLAN

1F



* Zijin Hall

July 5 | Welcome Reception
 July 7 | Conference Banquet

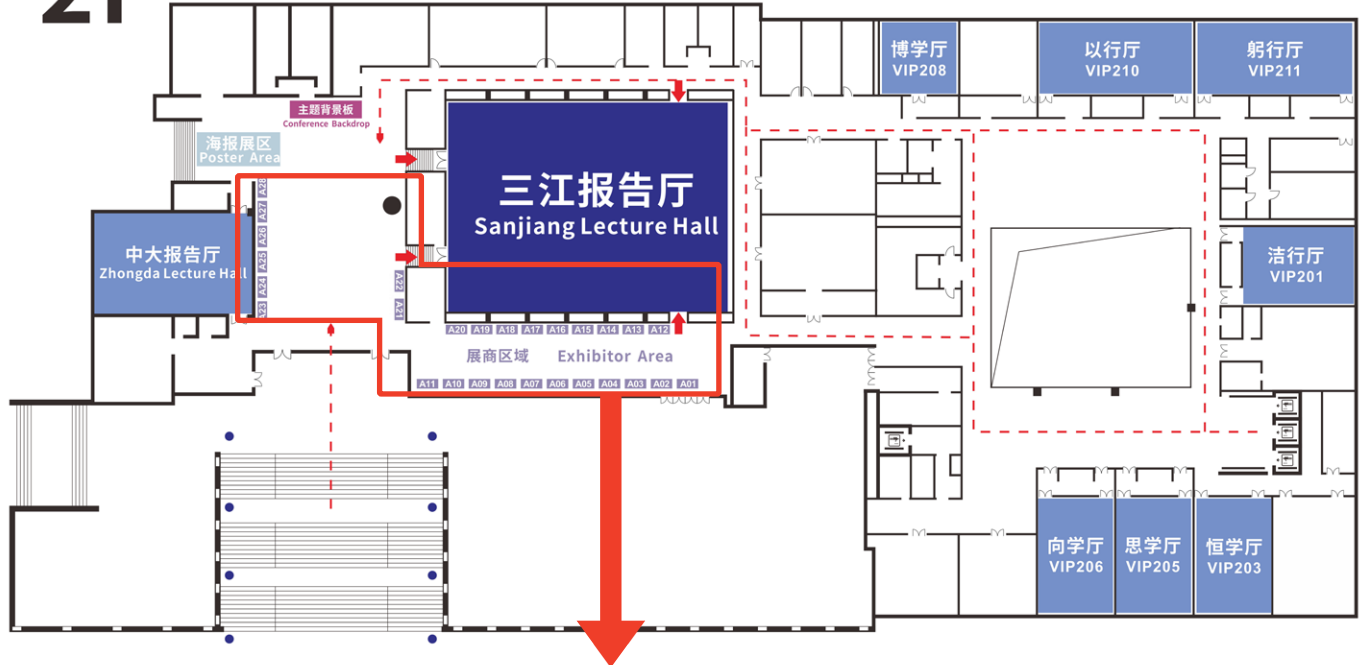
* All-Day Restaurant

July 6 | Lunch Buffet & Dinner Buffet
 July 7 | Lunch Buffet
 July 8 | Lunch Buffet



FLOOR PLAN

2F



A01



苏州国家实验室
SUZHOU NATIONAL LABORATORY

A02



合见工软
UNIVISTA

A03

NAURA
北方华创

A04

概伦电子
PRIMARIUS

A05

GBTEST

A06

Micro Support
Micro support Co.,Ltd.

A07

nano scribe

A08

OXFORD
INSTRUMENTS

A09

LEBOSEMI
雷博微电子设备

A10

EXWELL
艾科威

A11

《中国科学》杂志社
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A12

GC inno

A13

INSTRUMENTS
LEUVEN

A14

KEYSIGHT

A15

矢量奇点
VECTOR SINGULARITY

A16

思尔芯
S2C EDA

A17

FSE 富临科技

A18

凯视迈
KathMatic

A19



香港共晶电子科技有限公司
HONGKONG EUTECTIC ELECTRONICS TECHNOLOGY CO.,LIMITED

A20

SSI
PRODUCTS

A21

迈塔光电
METATEST CORPORATION

A22

LinkZill

A23

MNT
MEET YOUR AID VISION

A24

CryoPride
中船赛力超低温

A25

诺派激光
NPI LASERS

A26

EXTREMO
TECH
极钼芯科技

A27

新毅东

A28

IEEE

AGENDA OVERVIEW

NANO 2026 Program Overview								
4 July								
12:00-18:00						ExCom Meeting Room - VIP206 (向学厅)		
5 July								
08:30-18:00		Tutorial Room - VIP201 (洁行厅)				AdCom Meeting Room - VIP206 (向学厅)		
18:00	Welcome Reception Room - Zijin Hall (紫金厅)							
6 July								
08:00-08:30	Opening Ceremony Room - Sanjiang Lecture Hall (三江报告厅)							
08:30-09:15	Plenary Speech #1 - Yu Sun Plenary Room - Sanjiang Lecture Hall (三江报告厅)							
09:15-10:00	Plenary Speech #2 - Kaustav Banerjee Plenary Room - Sanjiang Lecture Hall (三江报告厅)							
10:00-10:20	Coffee Break							
10:20-10:50	Keynote Speech #1 - Tibor Grasser Room - Zhongda Lecture Hall (中大报告厅)		Keynote Speech #2 - Peng Zhou Room - VIP201 (洁行厅)		Keynote Speech #3 - John Yeow Room - VIP210 (以行厅)		Keynote Speech #4 - Dae-Hyeong Kim Room - VIP211 (躬行厅)	
10:50-12:00	AI for Nanomaterials Design and Fabrication - I Room - Zhongda Lecture Hall (中大报告厅)	Selected Areas in Nano-Scale Communications Room - VIP201 (洁行厅)	Single Photon and Single Electron with 2D Materials Room - VIP210 (以行厅)	Perovskite Optoelectronics & Nanophotonics Room - VIP211 (躬行厅)	Modeling and Simulation Tools for Emerging Nanoscale Circuits - I Room - VIP208 (博学厅)	First-Principles Engineering of Novel Materials and Devices - I Room - VIP206 (向学厅)	Advanced Optoelectronic Materials and Devices - I Room - VIP205 (思学厅)	Functional Soft Materials for Bio-Integrated Nanomedicine Room - VIP203 (恒学厅)
12:00-13:30	Lunch							
13:30-14:00	Keynote Speech #5 - Tianling Ren Room - Zhongda Lecture Hall (中大报告厅)		Keynote Speech #6 - Deep Jariwala Room - VIP201 (洁行厅)		Keynote Speech #7 - John H Lau Room - VIP210 (以行厅)		Keynote Speech #8 - Guilhem Larrieu Room - VIP211 (躬行厅)	
14:00-15:30	AI for Nanomaterials Design and Fabrication - II Room - Zhongda Lecture Hall (中大报告厅)	Recent Advances in Heterogeneous Integration and Chiplets Room - VIP201 (洁行厅)	2D Materials Synthesis and Inspection Room - VIP210 (以行厅)	Silicon/2D Materials Heterostructures Room - VIP211 (躬行厅)	Modeling and Simulation Tools for Emerging Nanoscale Circuits - II Room - VIP208 (博学厅)	First-Principles Engineering of Novel Materials and Device - II Room - VIP206 (向学厅)	Advanced Optoelectronic Materials and Devices - II Room - VIP205 (思学厅)	Efficient Ising Machine Implementation and its Applications Room - VIP203 (恒学厅)
15:30-15:50	Coffee Break							
15:50-18:00	AI for Nanomaterials Design and Fabrication - III Room - Zhongda Lecture Hall (中大报告厅)	Nanoarchitectures: From Assembly to Applications Room - VIP201 (洁行厅)	2D Materials Synthesis and Inspection & Heterostructures with Silicon Room - VIP210 (以行厅)	Probabilistic Computing, Nanoelectronics & Heterogeneous Integration Room - VIP211 (躬行厅)	Merging Life Science with Physical Science for New Functional Devices - I Room - VIP208 (博学厅)	First-Principles Engineering of Novel Materials and Devices - III Room - VIP206 (向学厅)	Nanoelectromechanical Systems (NEMS) Room - VIP205 (思学厅)	Bio-Interfaces, Bio-Inspired Surfaces & Modeling and Simulation Room - VIP203 (恒学厅)
7 July								
08:30-09:15	Plenary Speech #3 - Stephen Y. Chou Plenary Room - Sanjiang Lecture Hall (三江报告厅)							
09:15-10:00	Plenary Speech #4 - Saptarshi Das Plenary Room - Sanjiang Lecture Hall (三江报告厅)							
10:00-10:20	Coffee Break							
10:20-10:50	Keynote Speech #9 - Jianpu Wang Room - Zhongda Lecture Hall (中大报告厅)		Keynote Speech #10 - Jun He Room - VIP201 (洁行厅)		Keynote Speech #11 - Yanwu Zhu Room - VIP210 (以行厅)			
10:50-12:00	AI for Nanomaterials Design and Fabrication - IV Room - Zhongda Lecture Hall (中大报告厅)	High-Frequency Acoustics at the Nanoscale - I Room - VIP201 (洁行厅)	Low-dimensional Nanomaterials and Nanoelectronics Room - VIP210 (以行厅)	Advanced Flexible Electronics with Multifunctional Applications - I Room - VIP211 (躬行厅)	Merging Life Science with Physical Science for New Functional Devices - II Room - VIP208 (博学厅)	Nanodevice Physics Room - VIP206 (向学厅)	Nano-Optoelectronics and Neuromorphic Systems - I Room - VIP205 (思学厅)	Emerging Spintronic materials and devices Room - VIP203 (恒学厅)
12:00-13:30	Lunch							
13:30-14:00	Keynote Speech #12 - Georgios Ch. Sirakoulis Room - Zhongda Lecture Hall (中大报告厅)		Keynote Speech #13 - Elena P. Ivanova Room - VIP201 (洁行厅)		Keynote Speech #14 - Winnie Ye Room - VIP210 (以行厅)			
14:00-15:30	AI for Nanomaterials Design and Fabrication - V Room - Zhongda Lecture Hall (中大报告厅)	High-Frequency Acoustics at the Nanoscale - II Room - VIP201 (洁行厅)	Machine Learning-Enhanced Plasma Nanotechnologies Room - VIP210 (以行厅)	Advanced Flexible Electronics with Multifunctional Applications - II Room - VIP211 (躬行厅)	Merging Life Science with Physical Science for New Functional Devices - III Room - VIP208 (博学厅)	Intelligent Adaptive Biointerfaces Room - VIP206 (向学厅)	Nano-Optoelectronics and Neuromorphic Systems - II Room - VIP205 (思学厅)	Nanofabrication & Nano-sensors Room - VIP203 (恒学厅)
15:30-15:50	Coffee Break							
15:50-18:00	AI for Nanomaterials Design and Fabrication - VI Room - Zhongda Lecture Hall (中大报告厅)	Emerging Technologies for Unconventional Computing Room - VIP201 (洁行厅)	Machine Learning-Enhanced and Emerging Plasma Nanotechnologies Room - VIP210 (以行厅)	Advanced Flexible Electronics with Multifunctional Applications - III Room - VIP211 (躬行厅)	Two-Dimensional (2D) Heterostructures for Next-Generation Optoelectronic and Neuromorphic Systems Room - VIP208 (博学厅)	Nanodevice Physics & Nano-Materials Room - VIP206 (向学厅)	Nano-Optoelectronics and Neuromorphic Systems - III Room - VIP205 (思学厅)	Modeling and Simulation - I Room - VIP203 (恒学厅)
18:00	Conference Banquet Room - Zijin Hall (紫金厅)							
8 July								
08:30-09:15	Plenary Speech #5 - Sorin Cotofana Plenary Room - Sanjiang Lecture Hall (三江报告厅)							
09:15-10:00	Plenary Speech #6 - Jianbin Xu Plenary Room - Sanjiang Lecture Hall (三江报告厅)							
10:00-10:20	Coffee Break							
10:20-10:50	Keynote Speech #15 - Yimao Cai Room - Zhongda Lecture Hall (中大报告厅)		Keynote Speech #16 - Yang Chai Room - VIP201 (洁行厅)		Keynote Speech #17 - James E. Morris Room - VIP210 (以行厅)		Keynote Speech #18 - Federico Rosei Room - VIP211 (躬行厅)	
10:50-12:00	Intelligent Edge Sensing and Computing Room - Zhongda Lecture Hall (中大报告厅)	Nano-Materials Room - VIP201 (洁行厅)	Nano-Optics, Nanophotonics, and Nano-Optoelectronics - I Room - VIP210 (以行厅)	Nano-Energy, Environment, and Safety Room - VIP211 (躬行厅)	Nanoelectronics - I Room - VIP208 (博学厅)	Nanofabrication Room - VIP206 (向学厅)	Nanomechanics Room - VIP205 (思学厅)	
12:00-13:30	Lunch							
13:30-14:00	Keynote Speech #19 - Oliver Schmidt Room - Zhongda Lecture Hall (中大报告厅)		Keynote Speech #20 - Jianfeng Zang Room - VIP201 (洁行厅)					
14:00-15:30	Intelligent Edge Sensing and Computing & Nanosensors and Nanoactuators Room - Zhongda Lecture Hall (中大报告厅)	Nano-Materials & Nano-Acoustic Devices, Processes, and Materials Room - VIP201 (洁行厅)	Nano-Optics, Nanophotonics, and Nano-Optoelectronics - II Room - VIP210 (以行厅)	Nano-Energy, Environment, and Safety & Nanomagnetism Room - VIP211 (躬行厅)	Nanoelectronics - II Room - VIP208 (博学厅)	Quantum, Neuromorphic, and Unconventional Computing - I Room - VIP206 (向学厅)	Nanosensors and Nanoactuators Room - VIP205 (思学厅)	
15:30-15:50	Coffee Break							
15:50-18:00	Modeling and Simulation - II Room - Zhongda Lecture Hall (中大报告厅)	Spintronics Room - VIP201 (洁行厅)	Nano-Optics, Nanophotonics, and Nano-Optoelectronics - III Room - VIP210 (以行厅)	Nano-biomedicine Room - VIP211 (躬行厅)	Nanoelectronics and Nanotechnology for Soft Electronics & Nanoscale Communications Room - VIP208 (博学厅)	Quantum, Neuromorphic, and Unconventional Computing - II Room - VIP206 (向学厅)		
18:00	Conference Closing Room - Zhongda Lecture Hall (中大报告厅)							

PLENARY SPEAKERS



Plenary Talk #1- Monday, 6 July, 2026, 08:30-09:15 | Sanjiang Lecture Hall-三江报告厅

Yu Sun University of Toronto, Canada

"Robotic Cell Surgery"



Plenary Talk #2- Monday, 6 July, 2026, 09:15-10:00 | Sanjiang Lecture Hall-三江报告厅

Kaustav Banerjee UC Santa Barbara, USA

"Atoms to Architectures: 2D Materials for Energy-Efficient Nanoelectronics"



Plenary Talk #3- Tuesday, 7 July, 2026, 08:30-09:15 | Sanjiang Lecture Hall-三江报告厅

Stephen Y. Chou Princeton University, USA

"The Invention of the Gate-All-Around (GAA) Transistor in 1996 (30 Years Ago): From Single-Electron MOS Memory to GAA"



Plenary Talk #4- Tuesday, 7 July, 2026, 09:15-10:00 | Sanjiang Lecture Hall-三江报告厅

Saptarshi Das The Pennsylvania State University, USA

"Scaling 2D CMOS: From Transistors to 3D Integrated Systems"



Plenary Talk #5- Wednesday, 8 July, 2026, 08:30-09:15 | Sanjiang Lecture Hall-三江报告厅

Sorin Cotofana Delft University of Technology, Netherlands

"Spin Wave Based Computing: Can Spin Wave Warriors Annihilate Charge Legions?"



Plenary Talk #6- Wednesday, 8 July, 2026, 09:15-10:00 | Sanjiang Lecture Hall-三江报告厅

Jianbin Xu The Chinese University of Hong Kong, China

"Reconfigurable Electronics and Photonics of Two-Dimensional Materials via Externally-Controlled Fields"

PLENARY SPEAKERS

Plenary Talk #1-Monday, 6 July, 2026, 08:30-09:15 | Sanjiang Lecture Hall-三江报告厅



Yu Sun

Professor

*University of Toronto,
Canada*

Biography

Yu Sun is a Professor in the Department of Mechanical and Industrial Engineering, with joint appointments in the Institute of Biomedical Engineering, Department of Electrical and Computer Engineering, and Department of Computer Science at the University of Toronto (UofT). He is a Tier I Canada Research Chair and was the founding Director of the UofT Robotics Institute. His lab specializes in developing innovative technologies and instruments for manipulating and characterizing cells, molecules, and nanomaterials. He is a Fellow of Canadian Academy of Engineering, a Fellow of The Academy of Science of Royal Society of Canada, a Fellow of Canadian Academy of Health Sciences, an International Member of the Chinese Academy of Engineering, and an International Member of the U.S. National Academy of Engineering. He was elected Fellow of IEEE, ASME, AIMBE, AAAS, NAI, CSME, and EIC for his work on micro-nano robotic systems and devices. Among the awards he received were an NSERC E.W.R. Steacie Fellowship, NSERC Synergy Award of Innovation, IEEE McNaughton Gold Medal, IEEE EMBS Technical Achievement Award, and IEEE NTC Pioneer Award in Nanotechnology. He is the Editor-in-Chief of IEEE Trans. Automation Science and Engineering and an editorial board member of the AAAS journal, Science Robotics.

Robotic Cell Surgery

Abstract

The capability of manipulating micro and nanometer-sized objects, such as cells and nanomaterials opens new frontiers in robotic surgery, disease diagnostics, industrial applications and enables new discoveries in many disciplines such as biology, medicine, and materials science. The past two decades have witnessed spurred development of micro-nanorobotic systems and technologies with common hallmarks of precision instrumentation, sensing, actuation, and control. This talk will begin with a brief review of the evolution of the robotic micromanipulation field, followed by an overview of challenges, opportunities, and representative advances recently made in this field. Examples of robotic cell manipulation systems for clinical surgery and drug screen will be given; sub-micrometer position control and sub-nanoNewton force control for realizing 3D intracellular and intra-tissue manipulation and measurement will be introduced; and mechanical nanosurgery of chemoresistant tumors will be discussed.

PLENARY SPEAKERS

Plenary Talk #2- Monday, 6 July, 2026, 09:15-10:00 | Sanjiang Lecture Hall-三江报告厅



Kaustav Banerjee

Professor

UC Santa Barbara, USA

Biography

Kaustav Banerjee is Professor of Electrical and Computer Engineering and Director of the Nanoelectronics Research Lab at the University of California, Santa Barbara. His research established atomically thin two-dimensional (2D) materials as scalable platforms for energy-efficient nanoelectronics, spanning transistors, beyond-copper interconnects, RF passives, memory, and monolithic three-dimensional integration. He pioneered predictive, device-physics-driven frameworks that revealed fundamental scaling limits of silicon–copper technologies and defined physically realistic, manufacturable pathways beyond them.

His contributions include the invention of a graphene-based kinetic inductor that resolved long-standing barriers to ultra-compact, high-frequency integrated systems, and the development of intercalated graphene interconnects independently validated and incorporated into advanced foundry technology roadmaps. To accelerate translation toward semiconductor manufacturing, he co-founded Destination 2D in 2021 to advance CMOS-compatible graphene platforms extending from interconnect scaling to thermal management and advanced packaging integration.

Professor Banerjee is a Fellow of IEEE, APS, AAAS, JSPS, and AIIA, and a Clarivate Highly Cited Researcher. His honors include the Humboldt Foundation Bessel Prize, the IEEE Kiyo Tomiyasu Award, and the JSAP Fellow International distinction from the Japan Society of Applied Physics.

Atoms to Architectures: 2D Materials for Energy-Efficient Nanoelectronics

Abstract

As conventional semiconductor technologies reach fundamental limits in electrostatics, interconnect resistivity, power density, and thermal management, sustaining nanoelectronic scaling in the AI era—and the energy efficiency of the global computing infrastructure it underpins—requires new materials and integration paradigms. Two-dimensional (2D) van der Waals materials—including graphene and transition-metal dichalcogenides—provide atomic-scale thickness control, tunable electronic structure, and distinctive transport physics. Through predictive, device-physics-driven frameworks coupled with experimentally validated platforms, Banerjee's work established how 2D materials overcome intrinsic scaling barriers of silicon–copper technologies—advancing beyond isolated demonstrations to define physically realistic, industry-aligned scaling trajectories with system-level consequences.

This plenary presents a nanoscale-physics perspective on 2D materials as foundational platforms bridging atoms to architectures, enabling continued scaling and dense monolithic three-dimensional (3D) integration. Core principles governing contacts, electrostatics, and energy transport will be examined, together with manufacturable pathways toward 2D transistors and intercalated graphene interconnects—advances independently validated, reflected in advanced foundry technology roadmaps, and translated toward industrial deployment through Destination 2D, co-founded by Banerjee.

PLENARY SPEAKERS

Plenary Talk #3- Tuesday, 7 July, 2026, 08:30-09:15 | Sanjiang Lecture Hall-三江报告厅



Stephen Y. Chou

Professor

Princeton University, USA

Biography

Dr. Stephen Y. Chou is the Joseph C. Elgin Professor of Engineering at Princeton University and a serial entrepreneur. He is the founder and founding chairman of Nanonex Corp., NanoOpto Corp., and Essenlix Corp., and a co-founder of BioNano Genomics Inc. He is a member of the U.S. National Academy of Engineering, a Fellow of the National Academy of Inventors, and a recipient of the IEEE Cledo Brunetti Award, the IEEE Nanotechnology Pioneer Award, and the Nanoimprint Pioneer Award. He is also a Fellow of the Packard Foundation, IEEE, AVS, ISNM, and OSA. Two of his technologies—nanoimprint and the nanochannel DNA analyzer—were recognized by MIT Technology Review as among the “Ten Emerging Technologies That Will Change the World.”

Over the past four decades, Dr. Chou's pioneering research has advanced nanofabrication, nanodevices, bioengineering, and medical diagnostics, with broad, significant, and lasting impact on both academia and industry. His work created new research fields, new industries, and significant businesses, and generated billions of dollars in economic value. His best-known inventions include nanoimprint, a new paradigm in nanopatterning that has grown into a billion-dollar industry; the single-electron MOS memory (SEMM); gate-all-around (GAA) transistor; lithographically induced self-assembly (LISA); single-domain patterned media, a new paradigm for magnetic data storage; major advances in nanophotonics, particularly various subwavelength optical elements (i.e., meta-optics); the nanochannel single-DNA-molecule analyzer; the ultrasensitive D2PA biosensor; and the iMOST (Instant Mobile Self-Test) platform, a game-changing instant mobile self-test technology for health.

As a serial entrepreneur, Dr. Chou has founded, built, and led three startup companies to translate his inventions and vision—including nanoimprint and iMOST—into new industries and major commercial products with direct and substantial impact on society and the economy. He has authored more than 700 journal and conference papers and is the primary inventor on more than 400 patents, more than half of which have been granted.

The Invention of the Gate-All-Around (GAA) Transistor in 1996 (30 Years Ago): From Single-Electron MOS Memory to GAA

Abstract

Thirty years ago, in 1996, the author and his student invented and experimentally demonstrated the first Gate-All-Around (GAA) transistor — featuring a nanowire channel (down to 10 nm) and a sub-70 nm all-around gate that together significantly suppress short-channel effects [1–2]. The GAA embodies several fundamental paradigm shifts in device concept and structure relative to the traditional planar MOSFET. Most of these shifts originated in inventions and discoveries made by the author and his students during the design, fabrication, and testing of a new device then termed the “single-electron MOS memory” (SEMM) — a device in which a single electron on a tiny floating gate can control the entire current flow through the nanowire channel of a MOSFET [3]. As the inventor of both the SEMM and the GAA, the author will present the path and history from the invention, demonstration, and discoveries in the SEMM to the invention, design, and demonstration of the first GAA. Following the GAA demonstration, a major focused funding program on nanotransistors — the DARPA Advanced Microelectronics (AME) Program — was launched in 1997 [4], which led to the FinFET in 1999 [5].

Continue.....

Abstract

The SEMM uses a tiny floating gate on top of the channel to modulate the current flowing between the source and drain. The floating gate was made extremely small so that placing a single electron on it requires a significant floating-gate voltage change, allowing electrons to be placed on the gate one by one in a controlled manner. To build an effective SEMM, the author recognized that the MOSFET channel must be made into a nanowire shape with a cross-section (width and height) smaller than the Debye length of an electron, so that a single electron on the floating gate can effectively control the current flow in the entire channel [3]. Because our fabrication patterned the Si nanowire channel first, the poly-Si gate subsequently deposited by LPCVD naturally surrounded three sides of the nanowire. However, an over-etch of the buried oxide opened the fourth side of the nanowire channel, causing the poly-Si gate to wrap around all channel surfaces and forming a wrap-around gate. Using a 10 nm nanowire channel together with this wrap-around (i.e., gate-all-around) geometry, we observed in the SEMM, at room temperature, a significant discrete drain-current change for each electron charged onto a 7 nm × 7 nm floating gate, indicating that the gate-all-around SEMM design was an excellent path to scale MOSFET gate length to unprecedented dimensions.

By removing the floating gate from the GAA-SEMM (Fig. 1), in 1996 we experimentally demonstrated that a sub-70 nm channel-length GAA MOSFET exhibits a significant reduction of short-channel effects as the nanowire width decreased from 75 nm to 35 nm (Fig. 2&3). To achieve sufficient total drive current, we further proposed a nanoribbon GAA structure in 1996 [1-2]. The talk will present the full historical path of the invention and development, including the initial designs, device concepts and physics, fabrication process, and key observations.

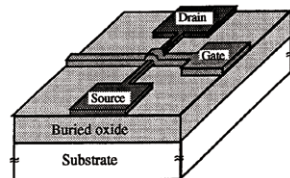


Fig. 1. Original Fig. 1 from the 1996 GAA paper [1], illustrating a nanowire channel with a wrap-around gate and stating: "To increase current drive, many closely spaced narrow channels can be used for each device."

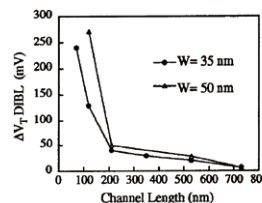


Fig. 2. Original Fig. 5 of 1996 GAA paper [1]: Threshold voltage roll-off due to DIBL (Drain-Induced Barrier Lowering)-threshold voltage difference at drain bias of 50 mV and 1.55 V as function of channel length for channel width of 35 nm and 50 nm.

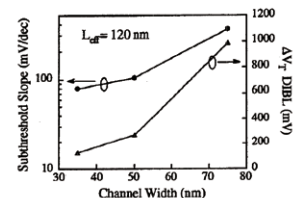


Fig. 3. Original Fig. 6 of 1996 GAA paper [1]: The subthreshold slope and threshold voltage roll-off due to DIBL as function of channel width for channel length of 120 nm.

- [1] E. Leobandung and S. Y. Chou, "Reduction of Short Channel Effects in SOI MOSFETs with 35 nm Channel Width and 70 nm Channel Length," Device Research Conference (DRC), Santa Barbara, CA, USA, June 24–26, 1996. doi: 10.1109/DRC.1996.546334.
- [2] E. Leobandung, J. Gu, L. Guo, and S. Y. Chou, "Wire-channel and wrap-around-gate metal–oxide–semiconductor field-effect transistors with a significant reduction of short channel effects," J. Vac. Sci. Technol. B, vol. 15, no. 6, pp. 2791–2792, Nov./Dec. 1997.
- [3] L. Guo, E. Leobandung, and S. Y. Chou, "A Silicon Single-Electron Transistor Memory Operating at Room Temperature," Science, vol. 275, pp. 649–651, 1997.
- [4] F. Pease, DARPA Advanced MicroElectronics (AME) Program, 1997–2000.
- [5] X. Huang et al., "Sub 50-nm FinFET," IEDM Tech. Dig., pp. 67–70, 1999. Senior author: C. Hu.. doi: 10.1109/IEDM.1999.823848

PLENARY SPEAKERS

Plenary Talk #4- Tuesday, 7 July, 2026, 09:15-10:00 | Sanjiang Lecture Hall-三江报告厅



Saptarshi Das

*Ackley Professor of
Engineering*

*The Pennsylvania State
University, USA*

Biography

Dr. Das received his B.Eng. degree (2007) in Electronics and Telecommunication Engineering from Jadavpur University, India, and Ph.D. degree (2013) in Electrical and Computer Engineering from Purdue University. He was a Postdoctoral Research Scholar (2013-2015) and Assistant Research Scientist (2015-2016) at Argonne National Laboratory (ANL). Dr. Das joined the Department of Engineering Science and Mechanics (ESM) at Penn State University in January 2016. Dr. Das was the recipient of the Young Investigator Award from the United States Air Force Office of Scientific Research in 2017 and the National Science Foundation (NSF) CAREER award in 2021. Das Research Group at Penn State leads a new multidisciplinary area of science, namely biomimetic sensing, neuromorphic computing, and hardware security inspired by natural designs found in the animal world that allow evolutionary success in resource-constrained environments.

Scaling 2D CMOS: From Transistors to 3D Integrated Systems

Abstract

Two-dimensional (2D) semiconductors provide a powerful platform for pushing transistor scaling beyond the limits of conventional CMOS while opening new pathways for integration. In this talk, I will highlight recent advances in scaling 2D field-effect transistors, with particular emphasis on achieving high-performance p-type devices to enable true CMOS operation and their implementation in functional logic circuits. I will then highlight the progress in monolithic and heterogeneous 3D integration, including three-tier 2D FETs, 3D CMOS, 3D heterogeneous platforms for near-sensor computing, self-powered 3D systems with integrated silicon photovoltaics, and 3D SRAM architectures. Finally, I will briefly discuss additional functional uses of 2D materials, including on-chip thermometry and their role as robust hard masks for advanced patterning. Together, these advances illustrate the transition of 2D materials from scaled transistors to fully integrated 3D electronic systems.

PLENARY SPEAKERS

Plenary Talk #5- Wednesday, 8 July, 2026, 08:30-09:15 | Sanjiang Lecture Hall-三江报告厅



Sorin Cotofana

Professor

*Delft University of
Technology, Netherlands*

Biography

Sorin Cotofana (IEEE Fellow) received the MSc degree in Computer Science from the “Politehnica” University of Bucharest, Romania, and the PhD degree in Electrical Engineering from Delft University of Technology, The Netherlands. He is currently with the Electrical Engineering, Mathematics and Computer Science Faculty, Delft University of Technology, Delft, the Netherlands. His current research is focused on: (i) the design and implementation of dependable/reliable systems out of unpredictable/unreliable components; (ii) ageing assessment/prediction and lifetime reliability aware resource management; and (iii) unconventional computation paradigms and computation with emerging nano-devices. He (co-)authored more than 300 papers in peer-reviewed international journal and conferences, and received 12 international conferences best paper awards, e.g., 2012 IEEE Conference on Nanotechnology, 2012 ACM/IEEE International Symposium on Nanoscale Architectures, 2005 IEEE Conference on Nanotechnology, 2001 International Conference on Computer Design. He served as Associate Editor for TCAS I (2009-2011), TNANO (2008-2014), and TC (2019-2022); Senior Editor for TNANO (2014-2019); Editor in Chief for TNANO (2000-2025); member of JETCAS Senior Editorial Board (2016-2017), and TMSCS Steering Committee member (2014-2018); Chair of the Giga-Nano CASS TC (2013-2015); IEEE Nano Council CASS representative (2013-2014); CASS Distinguished Lecturer (2019-2022); CASS BoG member (2020-2025) and has been actively involved as Reviewer, Technical Program Committee (TPC) member, and TPC (track) and general (co)-chair, in the organization of numerous international conferences.

Spin Wave Based Computing: Can Spin Wave Warriors Annihilate Charge Legions?

Abstract

In this presentation we provide an overview of recent efforts towards developing computing systems based on Spin Waves (SW) instead of charges and voltages. Note that SW computing constitutes a spintronics subfield, which utilizes magnetic excitations for computation and memory applications. We start with an introduction to magnetic interactions, SW physics, and basic SW computing mechanisms. Subsequently, we review state-of-the-art SW devices, i.e., SW interaction-based Majority gates, SW phase rotation Threshold Logic gates, and SW switch Boolean Logic gates, while discussing the specific challenges ahead when attempting to combine such SW gates to obtain circuits and ultimately computing systems. We consider essential aspects, e.g., gate interconnection, logic levels restoration, gate input-output consistency, and fan-out achievement, and we argue that practically relevant pure SW circuits cannot operate independently and they need to be embedded into conventional Complementary Metal-Oxide-Semiconductor (CMOS) circuit wrappers to obtain complete functional hybrid computing systems. We discuss challenges towards the practical realization of such hybrid SW-CMOS systems and present estimates of their potential performance, which suggest that hybrid SW-CMOS systems exhibit ultralow-power operation and may ultimately outperform conventional CMOS circuits in terms of power-delay-area product. Finally, we take a different perspective on SW physics and demonstrate that by leveraging Gilbert dumping, and otherwise unwanted phenomenon, we can obtain extremely effective convolution, an essential neural networks computation kernel, implementations. We conclude with a brief presentation of the SPIDER project approach (EC contract number 101070417), which is the first ever attempt to experimentally demonstrate the feasibility of hybrid SW-CMOS systems.

PLENARY SPEAKERS

Plenary Talk #6- Wednesday, 8 July, 2026, 09:15-10:00 | Sanjiang Lecture Hall-三江报告厅



Jianbin Xu^{1,2,3}

Professor

¹Department of Electronic Engineering and Materials Science and Technology Research Center, The Chinese University of Hong Kong, Shatin, NT, Hong Kong SAR, China

²Shenzhen Research Institute, The Chinese University of Hong Kong, Nanshan, Shenzhen, China

³Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China

Biography

Prof. Dr. Xu received his B.Sc. and M.Sc. from Nanjing University in 1983 and 1986, respectively. Since 1988, he was highly privileged to study in the University of Konstanz, particularly under the supervision of Prof. Dr. Klaus Dransfeld (Member of German National Academy of Sciences; Founding Director of Institute for High Magnetic Fields, Max-Planck Society; Former Director of Institute for Solid State Research, Max-Planck Society). His doctoral dissertation was focused on nanoscopic heat transport associated with electronic processes. He earned his doctorate (Dr.rer.nat.) in 1993. Afterwards, he joined the Department of Electronic Engineering, The Chinese University of Hong Kong (CUHK). He has been promoted to a Professor in the department since the midst of 2002, and named as Choh-Ming Li Professor of Electronic Engineering since August 2022. He serves as the Associate Dean (Mainland Affairs), Faculty of Engineering, and Director of Materials Science and Technology Research Center at CUHK, and Deputy Chairman of Hong Kong Materials Research Society (HKMRS). Meanwhile, he is currently Academic Vice President of Shenzhen Institutes of Advanced Technology, Chinese Academy of Science.

Prof. Dr. Xu's research interests include nanoscience and nanotechnology for electron devices and micro/nanoelectronics, namely 2D materials and devices; scanning probe techniques for electronics; advanced energy science and technology; interface engineering for materials and devices; physics and technology of organic semiconductors; functional and electronic oxides, etc. He has published c.a. 630 papers in peer-reviewed professional journals and conferences, with c.a. 32000 SCI peer citations, and 37000 Google Scholar citations. He has been named as Highly Cited Researcher multiple times by Clarivate Analytics. Meanwhile, he has secured more than 50 competitive research grants. He actively participates in a myriad of professional activities and has served as Editor of IEEE Trans. Electron Devices, and Editorial Board of ACS Nano as well as conference/symposium chair in several international conferences. He is an elected Fellow of IEEE, Optica and Hong Kong Institution of Engineers, an elected Foreign Fellow of European Academy of Sciences, and Member of American Physical Society. He is a recipient of Joint Research Fund for Overseas Chinese, Hong Kong and Macau Scholars (formerly Distinguished Young Scholar Fund for Overseas Chinese), awarded by NSFC, a nationally prestigious fund; The Higher Education Outstanding Scientific Research Output Awards (Science and Technology) in the category of Natural Sciences (2nd Class), Ministry of Education, China; Research Excellence Award by The Chinese University of Hong Kong; Vice-Chancellor's Outstanding Fellow of Faculty of Engineering, The Chinese University of Hong Kong; Chang Jiang Scholar Chair Professor by Ministry of Education, China.

Reconfigurable Electronics and Photonics of Two-Dimensional Materials via Externally-Controlled Fields

Abstract

Conventional hardware of electronics and optoelectronics is typically designed for a predefined operating function, whereas emerging edge-intelligence systems increasingly require devices that can adapt their sensing, memory, and computing properties to altering tasks and environments. Reconfigurable electronics provides a promising route toward such adaptive hardware by enabling device characteristics and functional states to be dynamically programmed after fabrication. Two-dimensional materials are particularly attractive for this purpose because their atomically-thin attributes and van der Waals interfaces allow carrier injection, electrostatic manipulation, charge trapping, and optical response to be efficiently modulated by external fields.

This presentation intends to show a unified view of reconfigurable electronics and photonics based on two-dimensional materials. It begins with contact-engineered reconfigurable Schottky-junction transistors, in which external drain bias reshapes carrier-injection barriers and reversibly switches the dominant transport polarity while low drain leakage currents

PLENARY SPEAKERS

Plenary Talk #6- Wednesday, 8 July, 2026, 09:15-10:00 | Sanjiang Lecture Hall-三江报告厅

Abstract

maintained [1]. This bias-selective carrier injection provides a compact physical basis for dynamically reconfigurable transistor operation. By building upon this capability, nonvolatile charge-storage functionality is incorporated at the Schottky interface to program the interfacial energy landscape [2]. The resulting devices exhibit dynamically switchable clockwise and counterclockwise transfer hysteresis, enabling reversible transitions between excitatory and inhibitory synaptic behavior. The talk further discusses dual-gate van der Waals device architectures, where asymmetric gate electrodes are independently configured to control carrier distribution and interfacial transport [3]. Such electrostatic programmability enables tunable transistor characteristics, multifunctional memory operation, and integrated logic functions within compact heterostructures. Reconfigurable non-monotonic transistors are then introduced, in which programmable anti-ambipolar transport generates tunable nonlinear signal transformation and artificial-neuron functionality. The adjustable non-monotonic response can be directly utilized for physiological-signal processing, providing a device-level platform for adaptive feature extraction and neuromorphic classification [4].

Finally, the same reconfigurable design strategy is extended to optoelectronics. Electrically programmable two-dimensional photodiodes enable switchable spectral selectivity and spectral logic, allowing optical sensing and elementary information processing to be implemented within the same device [5]. Physics-aware optical logic computing based on light-feature co-encoding further exploits the intrinsic nonlinear optical response of functional materials to process optical power and temporal information simultaneously [6].

Together, these studies show that the strong external-field sensitivity of two-dimensional materials can be translated into programmable carrier injection, charge storage, non-monotonic transport, and optical response. This commonly-appeared physical framework enables dynamically configurable devices spanning from transistors, memories, synapses, logic elements, artificial neurons, photodetectors, to optical computing systems, offering a pathway toward compact and energy-efficient adaptive hardware for future edge intelligence.

Keywords: Two-dimensional materials; reconfigurable electronics; nonvolatile memory; multifunctional logic; in-sensor computing; optical computing.

Acknowledgements: The work is in part supported by Research Grants Council of Hong Kong, particularly, via Grant Nos. AoE/P-701/20, 14220022, 14212424, CRF Group Research Scheme (No. C4001-23GF, C4050-21EF, C1015-21EF, C4028-20EF), CUHK Group Research Scheme, CUHK Postdoctoral Fellowship, Basic and Applied Research Foundation of Guangdong Province (No.2023B1S1S120049).

References

- [1] Y. Zhou, L. Tong, Z. Chen, L. Tong, Y. Pang, and J. B. Xu, "Contact-engineered reconfigurable two-dimensional Schottky junction field-effect transistor with low leakage currents," *Nature Communications*, vol. 14, 4270, 2023.
- [2] Y. Zhou, L. Tong, Z. Chen, L. Tong, H. Li, Y. Pang, and J. B. Xu, "Vertical Nonvolatile Schottky-Barrier-Field-Effect Transistor with Self-Gating Semimetal Contact," *Advanced Functional Materials*, vol. 33, 2213254, 2023.
- [3] Y. Pang, Y. Zhou, L. Tong, and J. B. Xu, "2D Dual Gate Field-Effect Transistor Enabled Versatile Functions," *Small*, vol. 20, 2304173, 2024.
- [4] Y. Pang, Y. Zhou, S. Qiu, L. Tong, N. Zhao, and J. B. Xu, "Artificial non-monotonic neurons based on nonvolatile anti-ambipolar transistors," *Nature Communications*, vol. 16, 3188, 2025.
- [5] X. Guo, Y. Zhou, Y. Zhang, X. Zhao, Y. Pang, L. Tong, Z. Sun, and J. B. Xu, "Two-Dimensional Reconfigurable Photodiode for In-Sensor Color Filtering and Spectral Logic," *Advanced Materials*, vol. 38, e72975, 2026.
- [6] L. Tong, L. Xu, G. Yang, X. Huang, W. Shi, W. Ju, M. Tang, X. Miao, P. Wang, J. B. Xu, and L. Ye, "Physics-Aware Reconfigurable Optical Logic Computing Scheme Through Light Feature Co-Encoding," *Advanced Functional Materials*, e75209, 2026.

SPECIAL EVENT

Tutorials

Event Date, Time, Location

Sunday, 5 July, 2026, 09:00-11:45, VIP201-洁行厅

Guest Speakers

Time: 09:00-09:45

Speaker: Hengjie Yu, Westlake University

Title: Artificial Intelligence in Nanomaterials and Nanobio Interface Research: A Tutorial on Prediction, Discovery, and Design

Time: 09:45-10:30

Speaker: Guixiang Li, Southeast University

Title: Structural Engineering and Stability Mechanisms of Perovskite Photovoltaic Devices

Time: 11:00-11:45

Speaker: Tingting Zhang, Nanjing University of Aeronautics and Astronautics

Title: Approximate and Stochastic Ising Machines

Organizers

Matteo Bruno Lodi, University of Cagliari

Li Tao, Southeast University



SPECIAL EVENT

Nanotechnology Youth Day

Event Date, Time, Location

Sunday, 5 July, 2026, 13:30-17:30, VIP201-洁行厅

Event Description

The Nanotechnology Youth Day event will provide students and young professionals with educational experiences to help them appreciate the possibilities and challenges associated with implementing nanotechnology solutions to problems that society faces. This event brings together students and young professionals in a day-long nanotechnology-focused forum where they will attend career-building workshops along with technical tutorials on current issues related to nanotechnology. The workshops will include presentations on soft skills development and mentoring relationships. The tutorials will include presentations on topics ranging from AI developments in nanotechnology to environmental impact of nanomanufacturing and sustainability.

Guest Speakers

Wen Jung Li, City University of Hong Kong
James E. Morris, Portland State University
Hengxing Ji, University of Science and Technology of China

Organizers

Matteo Bruno Lodi, University of Cagliari
Li Tao, Southeast University



SPECIAL EVENTS

Conference Banquet: IEEE NTC Awards Ceremony and Announcement of IEEE-NANO 2027

Event Date, Time, Location

Tuesday, 7 July, 2026, 18:00-20:30, Zijin Hall-紫金厅

Event Description

IEEE Nanotechnology Awards Presentations:
IEEE Nanotechnology Council Pioneer Awards
IEEE Nanotechnology Council Distinguished Service Award
Chapter of the Year Award 2024
Chapter of the Year Award 2025
Technical Achievement Award
Technical Committee Award
TNANO Best Paper of the Year Award
INM Best-Paper Award
NTC Best PhD Thesis Award In Nanotechnology

Invitation to IEEE-NANO 2027: Prof. Giovanni Finocchio

Student Design Competition

Event Date, Time, Location

Tuesday, 7 July, 2026, 12:00-13:00, VIP201-洁行厅

Event Description

All eligible students or student teams are invited to participate in the NANO Student Design Competitions (SDC), held in conjunction with the 26th IEEE International Conference on Nanotechnology (IEEE-NANO 2026) will be held from July 5 – 8, 2026, in Nanjing, China.

The NANO SDC encourages students to employ creative problem solving and gain practical design experience by developing small samples, synthesis and characterization methodologies, novel software, simple prototypes or system to address a problem stated in the competition rules while following specified constraints.

TECHNICAL PROGRAM

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Special Invited Sessions
Oral Sessions
Poster Sessions



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IEEE-NANO 2026

KEYNOTE SPEAKERS



Prof. Tibor Grasser

TU Wien, Austria

"Benchmarking Insulators for Devices Based on 2D Materials"



Prof. Peng Zhou

Fudan University, China

"Wafer-scale MoS₂ Growth and Its Ultrafast Flash Memory"



Prof. John Yeow

University of Waterloo, Canada

"The Development of Multi-Pixel Field Emission X-ray Devices"



Prof. Dae-Hyeong Kim

Seoul National University, South Korea

"Robust Power Supply for Soft Implantable Bioelectronics"



Prof. Tianling Ren

Tsinghua University, China

"Novel Integrated Device Technologies Driving Moore's Law"



Prof. Deep Jariwala

University of Pennsylvania, USA

"III-Nitride Ferroelectrics: From Materials to Technology Development"



Dr. John H Lau

Unimicron Technology Corporation

"Chiplets and Heterogeneous Integration"



Dr. Guilhem Larrieu

LAAS-CNRS, France

"Nanotechnology for Deciphering Brain Function on Chip: High-Resolution Neural Interfaces with Nanoelectrode Arrays"



Prof. Jianpu Wang

Nantong University, China

"Perovskite LEDs for Lighting and Displays"



Prof. Jun He

Wuhan University, China

"Wafer-Scale Two-Dimensional Semiconductor Materials and Post-Moore Information Devices"



Prof. Yanwu Zhu

University of Science and Technology of China, China

"Precision Construction and Functional Exploration of Novel Artificial Carbon Crystals at the Atomic Scale"



Prof. Georgios Ch. Sirakoulis

Democritus University of Thrace, Greece

"Engineered Living Materials: Challenges and Perspectives"



Prof. Elena P. Ivanova

Royal Melbourne Institute of Technology University, Australia

"Shedding Light on the Interfaces of Biomimetic Nanostructured Surface"



Prof. Winnie Ye

Carleton University, Canada

"Subwavelength Metamaterial Grating Couplers as Enablers for High-Performance Optical Communication Interfaces"



Prof. Yimao Cai

Peking University, China

"Scalable RRAM Technology for Advanced Memory and Intelligent Computing"



Prof. Yang Chai

The Hong Kong Polytechnic University, China

"Bioinspired In-Sensor Computing for Artificial Vision"



Prof. James E. Morris

Portland State University, USA

"Pseudo-Inductance and Electron Hopping in Discontinuous Metal Thin Films"



Prof. Federico Rosei

University of Trieste, Italy

"Energy Challenges from the Materials Perspective"



Prof. Oliver Schmidt

Chemnitz University of Technology, Germany

"Assembly and Self-Assembly of Autonomous Microrobots – Following Nature's Principles"



Prof. Jianfeng Zang

Huazhong University of Science and Technology, China

"Implantable Soft Acoustic Hydrogels for Ultrasound Sensors on Monitoring Physiological Signals"

KEYNOTE SPEAKERS



KN #1 - Monday, 6 July, 2026, 10:20-10:50 | Venue: Zhongda Lecture Hall (中大报告厅)
Chair: Tong Wu, Nanjing University, China

Tibor Grasser

Professor
TU Wien, Austria

Biography: Prof. Tibor Grasser is an IEEE Fellow and head of the Institute for Microelectronics at TU Wien. He has edited various books, e.g. on the bias temperature instability, hot carrier degradation, and low-frequency noise (all with Springer), is a distinguished lecturer of the IEEE EDS, has been involved in outstanding conferences such as IEDM (General Chair 2021), IRPS, SISPAD, ESSDERC, and IIRW, is a recipient of the Best and Outstanding Paper Awards at IRPS (2008, 2010, 2012, and 2014), IPFA (2013 and 2014), ESREF (2008) and the IEEE EDS Paul Rappaport Award (2011). He served as an Associate Editor for IEEE T-ED and Microelectronics Reliability (Elsevier).

Speech Title: Benchmarking Insulators for Devices Based on 2D Materials

Abstract: Despite major progress in 2D electronic devices, their predicted performance remains largely unrealized, partly because scalable insulators compatible with 2D materials are still lacking. Unlike SiO₂ for silicon, no insulating material has yet enabled commercially competitive 2D transistor technology.

Identifying suitable insulators is a central challenge for 2D nanoelectronics, especially as sub-10 nm channel scaling requires gate insulators with sub-1 nm equivalent oxide thickness (EOT). To support competitive device performance, these insulators must combine low gate leakage, low interface and border trap densities, and high dielectric strength.

Current candidates include conventional amorphous 3D oxides, native 2D oxides, layered 2D crystals such as hBN and mica, and ionic 3D crystals such as CaF₂ and related fluorides. However, each class has limitations: 3D oxides form poor interfaces and contain border traps; native oxides often suffer from non-stoichiometry, limited stability, and narrow bandgaps; hBN offers excellent interfaces but insufficient dielectric performance for sub-1 nm EOT; and other 2D insulators remain difficult to scale. In addition, vdW gaps and dead layers introduce additional penalties in terms of EOT which severely limit the scalability of some materials. This talk reviews the state of the art, key challenges, and possible solutions.

KEYNOTE SPEAKERS



KN #2 - Monday, 6 July, 2026, 10:20-10:50 | Venue: VIP201 (洁行厅)

Chair: Zehua Hu, Nanjing University, China

Peng Zhou

Professor

Fudan University, China

Biography: Dr. Peng Zhou's groundbreaking contributions lie in resolving the fundamental challenge of balancing high-speed and non-volatile charge storage in floating-gate transistors since their invention in 1967. This breakthrough led to the development of the 400-picosecond "PoX" flash memory and the "Changying" architecture integrated with CMOS. Additionally, he leveraged the atomic-layer semiconductor to develop the "WUJI" RISC-V microprocessor, pioneered the innovative "all-in-one" transistor that integrates sensing, memory, and computing functions, and proposed the "QingNiao" system for the space satellites communication. These discoveries have established an independent intellectual framework and solidified his international academic leadership. This series of achievements marks a critical breakthrough in advancing atomic-layer semiconductors from fundamental physical devices to disruptive systems.

Speech Title: Wafer-scale MoS₂ Growth and Its Ultrafast Flash Memory

Abstract: Two-dimensional (2D) semiconductors, such as transition metal dichalcogenides, provide an opportunity for beyond-silicon exploration. However, the lab-to-fab transition of 2D semiconductors is still in its preliminary stages, and it has been challenging to meet manufacturing standards of stability and repeatability. Thus, there is a natural eagerness to grow wafer-level, high-quality films with industrially acceptable scale-cost-performance metrics. Here we report an improved chemical vapour deposition synthesis method in which the controlled release of precursors and substrates predeposited with amorphous Al₂O₃ ensure the uniform synthesis of monolayer MoS₂ as large as 12 inches while also enabling fast and non-toxic growth to reduce manufacturing costs. Transistor, flash memory arrays and "all in one" device integration were fabricated to further confirm the high quality of the film and its integrated circuit application potential. Those works achieve the co-optimization of scale-cost-performance metrics and lay the foundation for advancing the integration of 2D semiconductors in industry-standard pilot lines.

KEYNOTE SPEAKERS



KN #3 - Monday, 6 July, 2026, 10:20-10:50 | Venue: VIP210 (以行厅)

Chair: Fengqiu Wang, Nanjing University, China

John Yeow

Professor

University of Waterloo, Canada

Biography: John T. W. Yeow received the B.A.Sc. degree in electrical and computer engineering, and M.A.Sc. and PhD. degrees in mechanical and industrial engineering from the University of Toronto, Toronto, ON, Canada. He is currently a Professor and a University Research Chair in the Department of Systems Design Engineering at the University of Waterloo, Waterloo, ON, Canada. He is focused on the development of micro/nanodevices for a wide range of applications. He is a recipient of the Professional Engineers Ontario Young Engineer Medal, Professional Engineers Ontario Engineering Excellence Award, Natural Science & Engineering Research Canada Innovation Challenge Award, Douglas R. Colton's Medal of Research Excellence, Micralyne Microsystems Design Award, Ontario Ministry of Research and Innovation's Early Researcher Award, University of Toronto Alumni Association 7T6 Early Career Award, 2011 IEEE NANO Excellence Paper award, Waterloo Institute for Nanotechnology Research Leader Award, and IEEE Canada Outstanding Engineer Award. He was a Canada Research Chair in Micro/Nanodevices (2009 - 2019). He served as the Editor-in-Chief of the IEEE Nanotechnology Magazine from 2014 - 2019. He is currently a Senior Editor of Microsystems & Nanoengineering, IEEE Transactions on NanoBioscience, and IEEE Transactions on Nanotechnology. He is an IEEE Fellow, and Fellow of the Canadian Academy of Engineering, the Engineering Institute of Canada, Engineers Canada, and a Member of College of New Scholars, Artists and Scientists of the Royal Society of Canada. He was a IEEE Nanotechnology Technical Council (NTC) Distinguished Lecturer, and a recipient of the 2021 IEEE NTC Distinguished Service Award. He was the IEEE NTC Vice-President of Educational Activities (2020-2022), and is serving as the IEEE NTC Vice-President Elect of Conferences (2024 - 2026). He was the General Chair of IEEE NANO 2014 in Toronto, Canada.

Speech Title: The Development of Multi-Pixel Field Emission X-ray Devices

Abstract: The first concept of multi-source Computed Tomography (CT) systems originated in the 1980s, and opened the way to innovative system concepts in X-ray and computed tomography. Multi-source CT systems offer promising opportunities in system performance. In addition, multi-source X-ray radiographic systems are widely studied, namely for X-ray stereographic imaging, X-ray tomosynthesis imaging, and inverse-geometry imaging. One significant benefit of the multi-source X-ray technology is the ability to fabricate the source array in various two-dimensional configurations. The more complicated distributive source topologies are designed to improve the sampling of projection data, to further improve both in-plane and depth imaging resolution within the constraints of the limited-angle acquisition of projection data. In multi-source systems, the X-ray sources are arranged in an array format, and each source is launched individually. However, current X-ray generators are not suited for these systems because of their large size, huge power requirement, and slow response. This talk will focus on the field emission X-ray technology that enables to the realization of multi-source CT systems.

KEYNOTE SPEAKERS



KN #4 - Monday, 6 July, 2026, 10:20-10:50 | Venue: VIP211 (躬行厅)

Chair: Benhui Hu, Nanjing Medical University, China

Dae-Hyeong Kim

Professor

Seoul National University, South Korea

Biography: Dae-Hyeong Kim obtained his B.S. and M.S. degree in Chemical Engineering from Seoul National University, Korea, in 2000 and 2002, respectively. He received his Ph. D. degree in Materials Science and Engineering from University of Illinois at Urbana Champaign in 2009. From 2009 to 2011, he was a post-doctoral research associate at University of Illinois. He joined Seoul National University in 2011 and is currently a professor in School of Chemical and Biological Engineering of Seoul National University. He has been serving as an associate director of Center for Nanoparticle Research of Institute for Basic Science (IBS) from 2017. He has been focusing on the research of nanomaterials-based bio-integrated and bio-inspired electronics. He is a fellow of National Academy of Engineering of Korea (2026-present) and Fellow of American Institute of Medical and Biological Engineering (2025-present). He has been recognized with several awards including George Smith Award (2009), TR 35 award (2011), Hong Jin-ki Creative Award (2015), SCEJ Award (2016), Korea Young Scientist Award (2017), and Prime Minister Commendation of Ministry of Science and ICT of Korea (2023). He has been recognized as a highly cited researcher by Clarivate Analytics in 2018-2025. He has served as the editors and editorial board members in multiple journals, including the Deputy Editor of Science Advances (2025-present).

Speech Title: Robust Power Supply for Soft Implantable Bioelectronics

Abstract: Recent advances in soft bioelectronics have attracted considerable attention due to their potential applications in personalized, bio-integrated healthcare systems. A primary challenge in this field arises from the mechanical mismatch between conventional rigid electronic devices and the soft, dynamic nature of human organs. To address this challenge, novel materials for soft, stretchable electronic devices have been developed, offering mechanical and chemical properties more compatible with in vivo cellular environments. Despite these advances, current stretchable conductive materials typically exhibit lower conductivity than commercial implantable devices, which leads to higher power consumption and more frequent battery replacement. This talk introduces a sustainable power supply solution for soft implantable bioelectronics to overcome these limitations. An all-solid-state thin-film lithium-ion battery, combined with parity-time symmetric long-range wireless power transfer, represents a promising approach. This system eliminates the need for periodic battery replacement, thereby significantly reducing the physical and economic burdens on patients. Key technological challenges and future research directions will also be briefly discussed. Ongoing efforts in developing unconventional materials and bioelectronic systems are expected to have a profound impact on addressing unmet needs in clinical medicine.

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KN #5 - Monday, 6 July, 2026, 13:30-14:00 | Venue: Zhongda Lecture Hall (中大报告厅)
Chair: Li Tao, Southeast University, China

Tianling Ren

Professor
Tsinghua University, China

Biography: Ren Tian-Ling is a Professor at the School of Integrated Circuits, Tsinghua University. He serves as Vice Dean of the School of Information Science and Technology. Professor Ren's research team has long been dedicated to the study of intelligent micro-nano electronic devices, chips, and systems, covering intelligent sensors and intelligent integrated systems, two-dimensional nanoelectronic devices and chips, flexible wearable devices, chips and systems. They have published over 900 papers in domestic and international academic journals and conferences, including papers in important SCI-indexed journals such as Nature, Nature Electronics, Nature Machine Intelligence, as well as IEDM conference papers. Prof. Ren has been recognized as a "Highly Cited Chinese Researcher" for 8 years by Elsevier. His work has received over 30,000 citations on Google Scholar, and have been granted more than 200 domestic and international invention patents.

Speech Title: Novel Integrated Device Technologies Driving Moore's Law

Abstract: Conventional silicon technologies now facing several physical limits. This keynote discusses how integrated device technologies can both extend Moore's Law and go beyond Moore's Law. The first part contains two subsections. The sub-nanometer gate-length transistors based on graphene and MoS₂, including a vertical-channel transistor with a 0.34 nm gate length. And the flexible in-memory computing chips, where memory and computation are integrated on mechanically compliant substrates to reduce data movement and support edge intelligence. The second part contains two beyond-Moore examples. One is intelligent artificial throat enabled by graphene acoustic devices, skin-compatible sensing, and speech recognition with semantic output. Another is a human-integrated dynamic 12-lead ECG system enabled by graphene electronic skin, flexible interconnects, and local AI processing for continuous cardiovascular monitoring. Together, these examples show that the new driving force can support smaller devices, flexible edge computing, and human-centered intelligent systems.

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KN #6 - Monday, 6 July, 2026, 13:30-14:00 | Venue: VIP201 (洁行厅)

Chair: Jinshui Miao, Shanghai Institute of Technical Physics, CAS, China

Deep Jariwala

Professor

University of Pennsylvania, USA

Biography: Deep Jariwala is currently an Associate Professor (promoted in 2022) and Peter & Susanne Armstrong Distinguished Scholar in the Department of Electrical and Systems Engineering at the University of Pennsylvania, with a courtesy appointment in the Department of Materials Science and Engineering. He leads the Device Research and Engineering Laboratory. He received his B.Tech. in Metallurgical Engineering from the Indian Institute of Technology (BHU), Varanasi in 2010 and his Ph.D. in Materials Science and Engineering from Northwestern University in 2015 (advisors: Mark C. Hersam and Tobin J. Marks), followed by postdoctoral research at the California Institute of Technology from 2015 to 2017 (with Harry A. Atwater). Professor Jariwala is an internationally renowned scholar in two-dimensional materials and nanoscale devices, with research spanning 2D semiconductor electronics, exciton photonics, ferroelectric memory, and low-power logic devices. He has published over 150 papers in journals including **Nature Materials** and **Nature Nanotechnology**, with more than 22,000 citations, and holds multiple U.S. patents. His honors include the 2024 Optica Adolph Lomb Medal, the 2022 Alfred P. Sloan Research Fellowship, the 2022 IEEE Photonics Society Young Investigator Award, the 2022 Bell Labs Prize (\$100,000), and the 2017 Forbes 30 Under 30 in Science. He was elected an Optica Fellow in 2026 and serves as an Associate Editor for **Nano Letters**.

Speech Title: III-Nitride Ferroelectrics: From Materials to Technology Development

Abstract: Since the demise of Dennard scaling, modern computer has largely relied on architectural innovations such as multi-core processors and GPUs vs CPUs to address the evolving needs of computing paradigm. This above problem has been exacerbated since computing has largely evolved from arithmetic centric to data centric in the age of billions of internet-connected devices and artificial intelligence. Thus, dense and reliable data storage combined with fast and high band-width access in novel memory devices has become the frontier for research in modern computing hardware. In this regard there have been several advancements across a variety of technologies in the past three decades. Ferroelectric materials and devices are among the forefront of these technologies due to their low-power and fast switching abilities but suffer from integration challenges. Simultaneously, developing data-heavy computing architectures in extreme environments is a growing need and a frontier challenge since silicon carbide (SiC) which is the leading logic technology for elevated temperature environments is limited by computing power and lack of memory devices that can operate at elevated temperatures.

Therefore, in this talk, I will try to make the case of how novel III-nitride materials might present interesting avenues to overcome some of the above limitations being faced by both Silicon and Silicon Carbide (SiC) hardware. I will start by presenting our ongoing and recent work on integration of 2D chalcogenide semiconductors emerging wurtzite structure ferroelectric nitride materials¹ namely aluminium scandium nitride (AlScN). First, I will present on Ferroelectric Field Effect Transistors (FE-FETs) made from 2D materials when integrated with AlScN and make the case for 2D semiconductors in this application.²⁻⁴ I will then show our most recent results on scaling 2D/AlScN FE-FETs, achieving ultra-high carrier and current densities⁵ in ferroelectrically gated MoS₂ and also demonstrate negative-capacitance FETs⁶ by engineering the AlScN/dielectric/2D interface.

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Then, I will switch gears to introduce the ferroelectric diode (FeD) memory device⁷ and demonstrate multi-bit operation⁸ as well as compute in memory (CIM)⁹ using FeD devices made from AlScN. Finally, I will demonstrate why AlScN FeDs are uniquely suited as a high temperature non-volatile memory demonstrating stable operation upto 600 C¹⁰ and how AlScN can be integrated onto SiC¹¹ for stable data retention in ferroelectric capacitors upto 1000 C.¹² I will end by providing a broad outlook on both AI computing hardware as well as high-temperature computing.¹³

References

- (1) Kim, K.-H.; et al. Jariwala, D. Nature Nanotechnology **2023**, 18 (5), 422-441.
- (2) Liu, X.; et al. Jariwala, D. Nano Letters **2021**, 21 (9), 3753-3761.
- (3) Kim, K.-H.; et al. Jariwala, D. Nature Nanotechnology **2023**, 18, 1044-1050.
- (4) Kim, K.-H.; et al. Jariwala, D. ACS Nano **2024**, 18 (5), 4180-4188.
- (5) Song, S.; et al. Jariwala, D. ACS Nano **2025**, 19 (9), 8985-8996.
- (6) Song, S.; et al. Jariwala, D. Applied Physics Letters **2023**, 123 (18).
- (7) Liu, X.; et al. Jariwala, D. Applied Physics Letters **2021**, 118 (20), 202901.
- (8) Kim, K.-H.; et al. Jariwala, D. ACS Nano **2024**, 18 (24), 15925-15934.
- (9) Liu, X.; et al. Jariwala, D. Nano Letters **2022**, 22 (18), 7690-7698.
- (10) Pradhan, D. K.; et al. Jariwala, D. Nature Electronics **2024**, 7 (5), 348-355.
- (11) He, Y.; et al. Jariwala, D. Applied Physics Letters **2023**, 123 (12).
- (12) He, Y.; et al. Jariwala, D. Nano Letters **2025**, 25 (12), 4767-4773.
- (13) Pradhan, D. K.; et al. Jariwala, D. Nature Reviews Materials **2024**, 9 (11), 790-807.

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KN #7 - Monday, 6 July, 2026, 13:30-14:00 | Venue: VIP210 (以行厅)

Chair: Siping Gao, Nanjing University of Aeronautics and Astronautics, China

John H Lau

Doctor

Unimicron Technology Corporation

Biography: John H Lau, with more than 40 years of R&D and manufacturing experience in semiconductor packaging, has published more than 530 peer-reviewed papers (385 are the principal investigator), 52 issued and pending US patents (31 are the principal inventor), and 23 textbooks. John is an elected IEEE fellow, IMAPS Fellow, and ASME Fellow and has been actively participating in industry/academy/society meetings/conferences to contribute, learn, and share.

Speech Title: Chiplets and Heterogeneous Integration

Abstract: Chiplet is a chip design method while heterogeneous integration is a chip packaging method. They are different but they work together. The advantages and disadvantages of chiplets will be discussed. The communications (bridges) between chiplets such as those embedded in build-up package substrate and those embedded in fan-out epoxy molding compound will be presented. Cu-Cu hybrid bonding bridges between chiplets will also be examined. Chiplets heterogeneous integration for high-performance computing driven by artificial intelligence on TSV (through-silicon via) interposer vs. on TGV (through-glass via) interposer (3.3D and 3.5D IC integration) will be examined. Some recommendations will also be provided.

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KN #8 - Monday, 6 July, 2026, 13:30-14:00 | Venue: VIP211 (躬行厅)

Chair: Tong Wu, Nanjing University, China

Guilhem Larrieu

Research Director
LAAS-CNRS, France

Biography: Guilhem Larrieu is Director of Research at CNRS, working at LAAS-CNRS laboratory in Toulouse (France) and Research Fellow at the University of Tokyo (Japan). He is leading an activity on Nano-&Neuro-Electronics (NNE lab) aiming at developing advanced devices based on functional nanostructures for ultimate nanoelectronics (logic & memory applications) and for innovative biosensor platforms in particular for neural interfacing. Guilhem Larrieu received a Ph.D. degree in Electronics in 2004 (Univ. Lille), then obtained a post-doctoral fellowship at the University of Texas at Arlington (UTA). In late 2005, he secured an independent researcher position at IEMN-CNRS laboratory in Lille on MOS transistor technology. In 2010 he moved to LAAS-CNRS to establish a new research axis on vertical nanowire based-devices. From 2019-2021, he was an Invited Researcher at the University of Tokyo to extend its nanoelectrode concepts to interface with high resolution human organoids. He has co-authored +100 publications in peer reviewed journals and 15 patents. He has served on Conference Committees of IEEE IEDM, IEEE ESSERC, IEEE NMDC, DATE, E-MRS and expert for several international funding agencies.

Speech Title: Nanotechnology for Deciphering Brain Function on Chip: High-Resolution Neural Interfaces with Nanoelectrode Arrays

Abstract: Understanding brain function requires technologies capable of probing neural activity at the spatial scale of synaptic integration and the temporal scale of electrophysiological signalling. However, conventional electrophysiological and optical techniques remain limited in their ability to access subcellular dynamics and to provide stable, long-term measurements in complex neural tissues. In this keynote, we present nanoelectrode array (NEA) technology as a promising platform for brain-on-chip systems. Using three-dimensional nanostructured electrodes with well-controlled electrochemical interfaces, NEAs allow dense, label-free electrical recordings with improved coupling to neurons. This makes it possible to access signals at the level of subcellular compartments and to better study network dynamics in advanced in vitro models such as brain organoids. Because the interface is bidirectional, it can be used both for high-resolution recording and for precise stimulation of subcellular elements, with good efficiency. We highlight recent advances in the fabrication and integration of large-scale NEA platforms, in particular their monolithic integration onto CMOS circuitry, as well as their combination with chemical sensors for multiplexed analysis. We also show that these systems can provide high-resolution and stable recordings over long periods, even across extended neural tissues. Altogether, this positions NEAs as a practical link between nanoelectronics and neuroscience, making it possible to study functional connectivity and signal propagation in three-dimensional neural systems in more detail. As a perspective, we will briefly discuss the move toward biohybrid systems, where nanoelectronic interfaces are combined with living neural networks within the same platform, opening new ways to study brain function and explore neuro-inspired approaches.

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KN #9 - Tuesday, 7 July, 2026, 10:20-10:50 | Venue: Zhongda Lecture Hall (中大报告厅)
Chair: Zehua Hu, Nanjing University, China

Jianpu Wang

Professor
Nantong University, China

Biography: Jianpu Wang has been a professor and president at Nantong University since 2025, has also held the position of professor at Nanjing Tech University since 2013. He has been awarded the National Science Fund for Distinguished Young Scholars (2017) and selected as Changjiang Scholar (2018). His research interests are organic/perovskite semiconductor devices and device physics, aiming for display and energy applications. He worked as a research engineer at Samsung Electronics in South Korea from 2003 to 2006, developing OLED displays using ink-jet printing technology. From 2006 to 2009, he carried out his Ph.D. studies on organic semiconductor/inorganic nanocrystal devices at Cavendish Laboratory, University of Cambridge. He was then a postdoctoral research associate studying organic magnetic field effect at Cavendish from 2009 to 2013.

Speech Title: Perovskite LEDs for Lighting and Displays

Abstract: Solution-processed light-emitting diodes (LEDs) are attractive for applications in low-cost, large-area lighting sources and displays. Metal halide perovskites can be processed from solutions at low temperatures to form crystalline direct-bandgap semiconductors with intriguing optoelectronic properties, such as high photoluminescence yield, good charge mobility and excellent color purity. In this talk, I will present our effort to boost the efficiency of perovskite LEDs to a high level which is comparable to organic LEDs.[1-8] More importantly, organic LEDs are difficult to maintain high efficiency at high current densities due to their excitonic nature and low charge mobilities. Low temperature solution-processed perovskite LEDs demonstrate remarkably high efficiency at high current densities, suggesting unique potential to achieve large size planar LEDs with high efficiency at high brightness.

References

- [1]Wang, J. et al. Interfacial Control Toward Efficient and Low-Voltage Perovskite Light-Emitting Diodes. *Adv. Mater.* 27 (2015) 2311.
- [2]Wang, N. et al. Perovskite light-emitting diodes based on solution-processed self-organized multiple quantum wells. *Nat. Photonics* 10 (2016) 699.
- [3]Cao, Y. et al. Perovskite light-emitting diodes based on spontaneously formed submicrometre-scale structures. *Nature* 562 (2018) 249.
- [4]Zou, W. et al. Minimising efficiency roll-off in high-brightness perovskite light-emitting diodes. *Nat. Commun.* 9 (2018) 608.
- [5]Min, H. et al. Additive treatment yields high-performance lead-free perovskite light-emitting diodes. *Nat. Photonics* 17 (2023) 755.
- [6]Min, H. et al. Spin coating epitaxial heterodimensional tin perovskites for light-emitting diodes. *Nat. Nanotechnol.* 19 (2024) 632.
- [7]Li, M. et al. Acceleration of radiative recombination for efficient perovskite LEDs. *Nature* 630 (2024) 631.
- [8]Ke, Y. et al. High-performance tandem perovskite LEDs through interlayer photon recycling. *Nature* 631 (2026) 53.

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KN #10 - Tuesday, 7 July, 2026, 10:20-10:50 | Venue: VIP201 (洁行厅)

Chair: Li Tao, Southeast University, China

Jun He

Professor

Wuhan University, China

Biography: Jun He, Professor (Grade-II) at Wuhan University. The Winner of the National Science Fund for Distinguished Young Scholars, Chief Scientist of the National Key R&D Program of the Ministry of Science and Technology, Leading Talent in Scientific and Technological Innovation (Young and Middle-Aged Category) of the National Ten-Thousand Talents Program (Organization Department of the CPC Central Committee), Leading Talent in Young and Middle-Aged Scientific and Technological Innovation of the Ministry of Science and Technology, Expert enjoying the Special Government Allowance of the State Council.

Professor Jun He has long been engaged in the application research of low-dimensional semiconductor materials and their devices, and has published more than 200 SCI papers, including more than 150 corresponding author papers with impact factors greater than 10 such as Science, Nature Materials, Nature Nanotechnology, Nature Electronics, Nature Synthesis and Physical Review Letters, which were cited more than 25,000 times. Applied for 40 invention patents and authorized more than 30. He has led over 20 national-level research projects, including the National Key R&D Program of China, Integrated Project and Key Support Project under the Major Research Plan of the National Natural Science Foundation of China. He has also led key R&D projects for several enterprises including State Grid Corporation of China and Guide Infrared. He successively won the First Prize of Natural Science Award of Ministry of Education (Ranking first), the First Prize of Natural Science Award of Beijing (Ranking first), the First Prize of Natural Science Award of Hubei Province (Ranking first), the First Prize of Science and Technology Award of Chinese Materials Research Society (Ranking first), the First Prize of Innovation Award of China Invention Association (Ranking first), and the International Union of Materials Research Societies (IUMRS)-Frontier Materials Scientists Award (FMSA). He is currently the Chair of the Physics Society of Hubei Province and the vice Chair of the Nanomaterials and Devices Branch of Chinese Materials Research Society. Concurrently serves as Editor-in-Chief of Frontiers of Physics, Associate Editor of Science Bulletin and Materials Today Chemistry.

Speech Title: Wafer-Scale Two-Dimensional Semiconductor Materials and Post-Moore Information Devices

Abstract: Integrated circuit materials and technologies constitute a major national strategic development priority. The International Roadmap for Devices and Systems (IRDS) indicates that post-Moore chips beyond 2030 will mainly rely on two-dimensional (2D) semiconductor material systems, and their wafer-scale fabrication and heterogeneous integration are critical to achieving this goal. To date, both intrinsically layered and non-layered materials can be prepared into corresponding 2D forms. Developing electronic devices with new principles and novel structures by leveraging the quantum properties of 2D electronic materials, and exploring their integrated applications with silicon-based devices, has become a prominent research focus. In this report, I will concentrate on the following aspects: (1) In materials research, we have pioneered the wafer-scale single-crystal synthesis and precise doping of various key 2D semiconductors including MoS₂, WSe₂ and Te, established a novel technical system for 2D van der Waals epitaxial growth, and extended this approach to non-van der Waals 2D materials such as GaN, lead salts, room-temperature magnetic semiconductors and multiferroics. The obtained materials deliver carrier transport velocities beyond those of silicon-based CMOS devices and enable high-performance broadband photodetection[1,8,10]. (2) In device

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engineering, we have innovatively proposed van der Waals intercalation technology and atomically precise gap engineering, realizing precise control over the interlayer spacing of 2D semiconductors and effective suppression of surface/interface defect states in devices. We have revealed the microscopic mechanisms of surface/interface contact and coupling in 2D semiconductors, and developed novel device fabrication strategies for advanced process nodes, including three-dimensional bump contacts and the development of new 2D single-crystal gate dielectrics[3,6,7,9]. (3) In system integration, we have developed key processes for the large-scale integration of 2D semiconductors, realizing vertically architected multilayer interconnected CMOS logic circuits and post-Moore three-dimensional integrated chips with high device yield and performance. We have also demonstrated optoelectronic integrated devices with novel architectures and "all-in-one" multifunctional heterogeneously integrated devices, whose performance metrics represented the highest reported values at that time[2,4,5,11].

Acknowledgement

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References

- [1]S. Li, H. Wei, Y. Xiong, Z. Wang*, F. Wang*, P. Zhang, Y. Cai, Y. Zhu, X. Zhan, Q. Zeng*, Z. Hu* and J. He*, Nature Synthesis 2026, 5, 680-689.
- [2]Y. Yu*, Y. Xu, V. Turkowski, B. Liu, S. Liu, Y. Xiang, Y. Liu, C. Shen, S. Wang, T. S. Rahman, T. Yu, J. He*, Physical Review Letters 2026, 136, 246901.
- [3]L. Yin, R. Cheng, X. Wan, J. Ding, J. Jia, Y. Wen, X. Liu, Y. Guo* and J. He*, Nature Materials 2025, 24, 197-204.
- [4]Y. Li*, Y. Xiong, X. Zhang, L. Yin, Y. Yu, H. Wang, L. Liao and J. He*, Nature Electronics 2025, 8, 36-45.
- [5]Y. Xu, Y. Xiang, M. Shi, B. Zhai, W. Dai, T. Wang, X. Liu, Y. Yu* and J. He*, Physical Review Letters 2025, 134, 066904.
- [6]W. Li, Q. Tao, Z. Li, G. Yang, Z. Lu, Y. Chen, Y. Wen, Y. Wang, L. Liao, Y. Liu* and J. He*, Nature Electronics 2024, 7, 131-137.
- [7]C. Liu, X. Zou*, Y. Lv, X. Liu, C. Ma, K. Li, Y. Liu, Y. Chai, L. Liao* and J. He*, Nature Nanotechnology 2024, 19, 448-454.
- [8]C. Chen, Y. Yin, R. Zhang, Q. Yuan, Y. Xu, Y. Zhang, J. Chen, Y. Zhang, C. Li, J. Wang, J. Li, L. Fei, Q. Yu, Z. Zhou, H. Zhang, R. Cheng, Z. Dong, X. Xu, A. Pan*, K. Zhang* and J. He*, Nature Materials 2023, 22, 717-724.
- [9]P. Luo, C. Liu, J. Lin, X. Duan, W. Zhang, C. Ma, Y. Lv, X. Zou, Y. Liu, F. Schwierz, W. Qin*, L. Liao*, J. He* and X. Q. Liu*, Nature Electronics 2022, 5, 849.
- [10]F. Wang* and J. He*, Science 2020, 370, 525-526.
- [11]R. Cheng, F. Wang, L. Yin, Z. Wang, Y. Wen, T. Shifa and J. He*, Nature Electronics 2018, 1, 356-361.

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KN #11 - Tuesday, 7 July, 2026, 10:20-10:50 | Venue: VIP210 (以行厅)

Chair: Chao Zhu, Southeast University, China

Yanwu Zhu

Professor

University of Science and Technology of China, China

Biography: Yanwu Zhu is a Professor and PhD Supervisor in the Department of Materials Science and Engineering at the University of Science and Technology of China. He received his Bachelor's degree from National University of Defense Technology, Master's degree from Peking University, and PhD from the National University of Singapore, and has conducted postdoctoral research at the National University of Singapore and the University of Texas at Austin. He has long been engaged in the research of preparation and interface construction of novel carbon materials, and has made innovative achievements in the fields of graphene activation, artificial carbon crystal construction and large-scale preparation of carbon materials. He has published more than 130 papers in top journals such as Science, Nature and Advanced Materials, with over 28,000 citations. He was supported by the Excellent Youth Fund of the National Natural Science Foundation of China, and won many awards such as the SCOPUS Young Science Star Bronze Award and the APEC Science Award for Innovation, Research and Education, and was selected into the Elsevier Highly Cited Chinese Materials Scientists List and Clarivate Highly Cited Scientists List for many consecutive years.

Speech Title: Precision Construction and Functional Exploration of Novel Artificial Carbon Crystals at the Atomic Scale

Abstract: Novel carbon materials are the core research direction of nano-material engineering, and the precise regulation of carbon crystal structure is the key to exploring new properties and applications. This report focuses on the charge injection technology developed for the structural regulation of fullerene C60 molecular crystals, which successfully constructs long-range ordered porous carbon crystals under atmospheric pressure and realizes gram-level preparation. It also expounds the universal value of this technology in atomic-level precision regulation of crystal structures, and discusses the potential application prospects of novel carbon crystals in energy storage, ion sieving and catalytic loading, as well as the development trend of carbon material system construction.

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KN #12 - Tuesday, 7 July, 2026, 13:30-14:00 | Venue: Zhongda Lecture Hall (中大报告厅)
Chair: Ke Chen, Nanjing University of Aeronautics and Astronautics, China

Georgios Ch. Sirakoulis

Professor

Democritus University of Thrace, Greece

Biography: Georgios Ch. Sirakoulis received the M.Eng. Diploma as well as the Ph.D. Diploma of Electrical and Computer Engineering from the Department of Electrical and Computer Engineering of the Democritus University of Thrace, in 1996 and 2001, respectively; he is Professor in the Department of Electrical and Computer Engineering since 2018 and served as chair for the period 2020-2025. In addition, he has been a visiting researcher / professor at UWE, UK since 2014 and prior to his academic appointment, he has worked in the private sector as a co-founder and research associate of Ulysses Ltd. (1999-2002). He is author(co-author) of more than 190 peer reviewed articles in prestigious international scientific journals and more than 200 peer reviewed articles in proceedings of international scientific conferences. He has co-authored and co-edited 10 scientific books and is the author of 42 chapters in international scientific books. He is EiC of IEEE Trans. on Nanotechnology, and he is serving and serves an Associate Editor in well-known magazines in the field of nanotechnology, circuits and systems, such as, IEEE Nanotechnology Magazine, IEEE AgriFood Electronics, IEEE TCAS II, IEEE Trans. on Computer, Plos One, Microelectronics, Integration, JCA, IJUC, IJPDS, etc. and is an elected member of many international and national scientific associations. He has supervised and he is supervising 21 Doctoral Dissertations, 41 Postgraduate Theses and 105 Diploma Theses, while some of the above dissertations and theses have been awarded by the Department, and by domestic and international bodies. Prof. G. Sirakoulis has worked as a Coordinator, Principal Investigator or Scientific Officer/Researcher in more than 30 research projects funded by GSRT, the European Union, HFRI, as well as by institutions and private companies in Greece and abroad, in research topics related to nanoelectronics and nanotechnology, future and emergent electronic-nanoelectronic devices, circuits and architecture, novel computational architecture, applications of complex and intelligent electronic systems in robotics, energy, etc. He has organized many international conferences and workshops, such as IEEE NMDC 2026, IEEE ICECS 2026, IEEE NMDC 2025, IEEE CAFÉ 2024, IEEE CNNA 2023, NANOARCH 2019, NANOARCH 2018, PACET 2017, etc. and has delivered invited talks at more than 40 international conferences, workshops and universities abroad in the last five years. More information on his research interests, published papers, research projects and international and domestic collaborations can be found on his website, and, in particular, on his personal page (<http://gsirak.ee.duth.gr>).

Speech Title: Engineered Living Materials: Challenges and Perspectives

Abstract: Engineered Living Materials (ELMs) are an emerging class of materials that combine the self-healing, regenerative, and adaptive characteristics of biological systems with the structural integrity and versatility of traditional materials science. This interdisciplinary field utilizes the dynamic properties of living organisms to create materials that are robust, reliable, and capable of evolving in response to environmental changes through chemical communication, nutrient uptake, and ion exchange. Mycelium, the vegetative part of fungi, is a noticeable choice among ELMs due to its rapid growth, sustainability, and ubiquity in nature. In this talk, we are going to explore the challenges and perspectives of the hardware representation of ELMs. The proposed talk offers a scalable pathway from material modeling to hardware realization, advancing digital twin approaches for engineered living materials while also paving the way for the integration of biological feedback,

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real-time control, and non-linear electrical characteristics using memristive devices, circuits, and architectures appropriate for neuromorphic and bio-hybrid computing architectures.

Engineered Living Materials (ELMs) combine the self-healing, regenerative, and adaptive properties of biological systems with standard materials' structural integrity and adaptability. This interdisciplinary field uses live living organisms' dynamic properties to develop materials that are robust, reliable, and capable of evolving in response to environmental changes through chemical communication, nutrient uptake, and ion exchange. Mycelium, the vegetative half of fungi, is a popular choice among ELMs due to its quick growth, sustainability, and widespread distribution in nature. In this discussion, we will look at the challenges and perspectives of hardware representation of ELMs. The proposed talk provides a scalable pathway from material modeling to hardware realization, advancing digital twin approaches for engineered living materials while also paving the way for the integration of biological feedback, real-time control, and non-linear electrical characteristics using memristive devices, circuits, and architectures appropriate for neuromorphic and bio-hybrid computing architectures.

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KN #13 - Tuesday, 7 July, 2026, 13:30-14:00 | Venue: VIP201 (洁行厅)

Chair: Yiyu Ou, Technical University of Denmark, Denmark

Elena P. Ivanova

Professor

Royal Melbourne Institute of Technology University, Australia

Biography: Elena P. Ivanova is Distinguished Professor at Royal Melbourne Institute of Technology University (Melbourne). Elena received her Doctor of Philosophy from the Institute of Microbiology and Virology, Ukraine, Doctor of Science from the Pacific Institute of Bio-organic Chemistry, Russian Federation, Juris Doctorate from the University of Melbourne, Australia.

She worked as a Postdoctoral Fellow at the New Energy and Industrial Technology Development Organization (Japan), Visiting Researcher at the Center of Marine Biotechnology, University of Maryland (USA), Visiting Professor at Hokkaido University (Japan), Cambridge University (UK) and the Institut Charles, Sadron, CNRS (France). She joined Swinburne University of Technology in 2001 and moved to RMIT University in 2018.

Elena's research focuses on the fundamental and applied fields of nanobiotechnology, design and fabrication of biomimetic antimicrobial surfaces. She published over 400 research papers and recipient of several international awards, including the Morrison Rogosa Award, American Society for Microbiology, UNESCO Biotechnology Fellowship, and the AIST Fellowship and Foreign Researcher Invitation Program of the Agency of Industrial Science and Technology, Japan, UNSW Eureka Prize for Scientific Research and others.

Speech Title: Shedding Light on the Interfaces of Biomimetic Nanostructured Surface

Abstract: The emergence of antibiotic-resistant bacteria is leading to an increase in untreatable infections around the world. To address this, a new class of bactericidal materials is being developed. The periodic array of the nanopillars on the surface of Clanger cicada *Psaltoda claripennis* wings represents the first example of a new class of biomaterials that kill bacteria on contact based solely on physical surface structure.

We developed the first biophysical model based on the bactericidal action of cicada wings to provide fundamental understanding of the mechanisms behind phenomenon. As the bacterial cells adsorb onto these nanopillar structures, the cell membrane stretches in the regions suspended between the pillars. If the degree of stretching is sufficient, this will lead to cell rupture. Another type of mechano-responsive nanomaterials is represented by graphene and graphene-related materials. Theoretical modelling and simulations provide compelling evidence to the physical perturbation of cell membranes.

One more model explaining physical rupturing of bacterial cells derived from the ability of nanofeatures to deflect and rupture when in contact with attaching cells. We showed that the exceptionally high aspect ratio (100 - 3000) of vertically aligned carbon nanotubes (VACNTs) impart their extreme flexibility, which allows to enhance the energy being stored in CNTs as they bend in contact with the bacteria. This work highlighted that the high bactericidal activity of high aspect ratio nanofeatures can outperform both natural bactericidal surfaces and other synthetic nanostructured multifunctional surfaces reported in previous studies.

The outcomes of our research provide evidence that the mechano-bactericidal activity of biomimetic nanostructured biomaterials with superior biocidal performance is a complex task requiring a multidisciplinary approach. The precision-engineered surface topographies to maximise microbial distraction is critical in the design and development of next-generation of antibacterial, antifungal and antiviral materials.

KEYNOTE SPEAKERS



KN #14 - Tuesday, 7 July, 2026, 13:30-14:00 | Venue: VIP210 (以行厅)

Chair: Fengqiu Wang, Nanjing University, China

Winnie Ye

Professor

Carleton University, Canada

Biography: Winnie Ye is a Fellow of Optica, the Canadian Academy of Engineering (CAE), and the Engineering Institute of Canada (EIC), and a Full Professor in Electronics at Carleton University. Her research focuses on silicon photonics and integrated optoelectronic devices for telecommunications, data communications, biophotonics, and renewable energy. She held a Tier II Canada Research Chair in Nano-scale IC Design for Reliable Opto-Electronics and Sensors (2009-2021).

Dr. Ye earned her B.Eng. from Carleton and her M.A.Sc. and Ph.D. from the University of Toronto and Carleton. She was an NSERC Postdoctoral Fellow at MIT and Harvard University. She has received major leadership awards from Optica and IEEE and currently serves as Chair of IEEE Women in Engineering and member of Board of Governor of the IEEE Photonics Society.

Speech Title: Subwavelength Metamaterial Grating Couplers as Enablers for High-Performance Optical Communication Interfaces

Abstract: Efficient fiber-chip interfaces are a foundational requirement for scalable photonic integrated circuits (PICs) in optical communication systems. Grating couplers are widely used for this purpose because their surface-normal coupling geometry supports wafer-level testing and relaxed packaging constraints. Despite these advantages, conventional grating couplers often suffer from limited efficiency, narrow operational bandwidth, polarization sensitivity, and vulnerability to fabrication variations, all of which restrict their deployment in high-performance communication links.

Subwavelength metamaterial grating couplers overcome these limitations by employing periodic features smaller than the wavelength to create an engineered effective medium. This approach enables precise control of the effective refractive index within the grating region, allowing smoother modal transitions between on-chip waveguides and radiated fields. As a result, metamaterial gratings exhibit improved upward radiation efficiency, reduced back-reflection, and increased tolerance to dimensional non-uniformities---key advantages for communication-grade devices.

A major strength of subwavelength designs lies in their ability to address polarization dependence. By tailoring duty cycles and trench geometries, effective indices for transverse-electric and transverse-magnetic modes can be balanced, enabling polarization-independent or polarization-flexible operation. Further performance gains are achieved through metamaterial apodization, in which subwavelength parameters vary along the propagation and transverse directions to shape the emitted field and improve overlap with standard Gaussian fiber modes. Single-etch metamaterial designs, as well as hybrid approaches incorporating overlays or self-focusing geometries, enable compact footprints while maintaining high efficiency and fabrication simplicity. Beyond fiber coupling, subwavelength metamaterial concepts extend naturally to on-chip optical antennas for free-space communication. By controlling the near-field phase distribution, these structures enable tailored far-field radiation patterns, including broadened beams and polarization-insensitive emission, opening opportunities for optical phased arrays, chip-to-free-space links, and hybrid photonic-wireless systems.

KEYNOTE SPEAKERS

Overall, recent advances in subwavelength metamaterial grating couplers demonstrate a versatile and scalable platform that simultaneously delivers high efficiency, broadband operation, polarization robustness, and compact integration. These attributes position metamaterial grating couplers as key enabling components for next-generation silicon photonics and advanced optical communication architectures.

KEYNOTE SPEAKERS



KN #15 - Wednesday, 8 July, 2026, 10:20-10:50 | Venue: Zhongda Lecture Hall (中大报告厅)

Chair: Weiqiang Liu, Nanjing University of Aeronautics and Astronautics, China

Yimao Cai

Professor

Peking University, China

Biography: Prof. Cai is a Boya Distinguished Professor and PhD supervisor at Peking University, the recipient of the National Science Fund for Distinguished Young Scholars and the Ministry of Education's Changjiang Young Scholars Program. He has been engaged in research on advanced semiconductor devices and integration, memory technologies, and brain-inspired chip technologies for many years. He has led multiple national projects, including the National Key R&D Program and the National Natural Science Foundation's Key Program. He has published over 100 academic papers in international conferences and journals, including IEDM, EDL, TED, DAC, TCAD, etc., and holds more than 70 Chinese patents and over 10 U.S. patents. He serves as the vice chairman of the China Memory Industry Alliance, Executive Director of the Beijing Semiconductor Industry Association, and Editorial Board Member of journals such as Science China, Journal of Electronics, and Chip.

Speech Title: Scalable RRAM Technology for Advanced Memory and Intelligent Computing

Abstract: Resistive random-access memory (RRAM) is a promising technology for advanced memory and intelligent computing due to its nonvolatile resistive states, CMOS compatibility, and in-memory computing capability. Scalable deployment requires coordinated device-to-system co-design under variability, reliability, and integration constraints.

This report presents scalable RRAM technologies for memory and computing. For memory, a progressive framework spans physical switching models, compact cell architectures, multi-level programming, and array-level reliability optimization, enabling controllable and dense resistive-state engineering. For computing, RRAM-based operators are discussed from linear matrix-vector multiplication to higher-order, hybrid-domain computation and reconfigurable mask-based architectures for neural, scientific, and multimodal edge intelligence.

A cross-layer design methodology toward edge AI systems is highlighted, requiring co-optimization across modeling, devices, arrays, and circuits with application-driven operator design.

KEYNOTE SPEAKERS



KN #16 - Wednesday, 8 July, 2026, 10:20-10:50 | Venue: VIP201 (洁行厅)

Chair: Ningmu Zou, Nanjing University, China

Yang Chai

Professor

The Hong Kong Polytechnic University, China

Biography: Prof. Yang Chai is the Chair Professor of Semiconductor Physics of the Hong Kong Polytechnic University. He is an IEEE Distinguished Lecturer, an IEEE Fellow, an Optica Fellow, IOP Fellow, and AAIA Fellow. He is the Director of Research Institute for Artificial Intelligence of Things, the Director of Joint Research Center of Microelectronics, and the Associate Dean of Faculty of Science (Research) at the Hong Kong Polytechnic University. He is also the Chair of Semiconductor Nanotechnology Alliance, the Vice President of the Physical Society of Hong Kong, and an Associate Editor of ACS Nano.

He is a receipt of the Falling Walls Science Breakthroughs in Engineering and Technology for his work on "Breaking the Wall of Efficient Sensory AI Systems", the BOCHK Science and Technology Innovation Prize in the field of AI and Robotics, The Croucher Senior Fellowship, The Ho Leung Ho Lee Foundation Science and Technology Innovation Award, and NSFC Distinguished Scholar. His current research interest mainly focuses on emerging electronic devices.

Speech Title: Bioinspired In-Sensor Computing for Artificial Vision

Abstract: The demand for accurate perception of the physical world leads to a dramatic increase in sensory nodes. However, the transmission of massive and unstructured sensory data from sensors to computing units poses great challenges in terms of power-efficiency, transmission bandwidth, data storage, time latency, and security. To efficiently process massive sensory data, it is crucial to achieve data compression and structuring at the sensory terminals. In-sensor computing integrates perception, memory, and processing functions within sensors, enabling sensory terminals to perform data compression and data structuring. We will overview optoelectronic intelligence for bioinspired in-sensor computing in artificial vision. We will examine optoelectronic devices that can compress and structure multidimensional vision information, and demonstrate a few vision sensors for different scenarios, including visual adaptation, motion perception, as well as event-driven vision sensors for spiking neural network.

References

- [1] Nature Electronics, 2022, 5, 84-91
- [2] Nature, 2022, 602, 364
- [3] Nature Electronics, 2020, 3, 664-671
- [4] Nature, 2020, 579, 32-33
- [5] Nature Nanotechnology, 2019, 14, 776-782
- [6] Nature Electronics, 2022, 5, 483-484
- [7] IEEE IEDM, 2022, 31.1-4
- [8] Nature Nanotechnology, 2023, 18, 882-888
- [9] Nature Electronics, 2023, 6, 870-878
- [10] Nature Nanotechnology, 2024, 19, 919-930
- [11] Nature Electronics, 2024, 7, 705-713
- [12] Nature Electronics, 2025, 8, 147-156

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- [13] Nature Electronics, 2025, 8, 680-688
- [14] Nature Reviews Bioengineering, 2025, 3, 939-954
- [15] Nature Photonics, 2025, 9, 9-10
- [16] Nature Nanotechnology, 2026, 21, 207-215
- [17] Nature Sensors, 2026, accepted

KEYNOTE SPEAKERS



KN #17 - Wednesday, 8 July, 2026, 10:20-10:50 | Venue: VIP210 (以行厅)

Chair: Siping Gao, Nanjing University of Aeronautics and Astronautics, China

James E. Morris

Professor

Portland State University, USA

Biography: Jim is an ECE Professor Emeritus at Portland State University (PSU), Oregon, and an IEEE Life Fellow, and has served as EE/ECE Department Chair at both SUNY-Binghamton and PSU. He has B.Sc. (1965) and M.Sc.(hons) degrees (1967) in Physics from the University of Auckland, a Ph.D. in EE (1971) from the University of Saskatchewan, and the Doctor Honoris Causa degree (2015) from Bucharest Polytechnic University. Jim has served the IEEE Electronics Packaging Society (EPS) and Nanotechnology Council (NTC) in multiple roles since 1991 and 2008 respectively, including as NTC President (2020-2021) and General Chair of 6 international conferences. His research interests have ranged from isotropic conductive adhesives, nanopackaging, nanoelectronics simulation, and discontinuous thin metal films to automotive engine control. Jim has taught continuously for over 60 years and published 10 books, 63 journal papers, 107 refereed conference papers, 33 book chapters, and one patent, plus >80 other conference presentations.

Speech Title: Pseudo-Inductance and Electron Hopping in Discontinuous Metal Thin Films

Abstract: When a metal is deposited on insulating substrate, e.g., Au on glass in vacuo, it initially grows as discrete nanoscale metal islands separated by nm gaps. Such films conduct charge by interisland tunnelling with an electrostatic activation energy [1-3]. The presentation will briefly cover the widely accepted conduction model [1, 2] and a revised contact injection version [3-5], which explains most of the former's problems, as an introduction. Early research papers mentioned the possibility of electron hopping [6,7] but were given scant attention. The experimental discrepancies with accepted conduction models led to the contact injection model [3-5] and the so-called "diode effect" due to unequal positive and negative charge injection [3-5, 8-10]. The time delay required to establish the space charge distributions at the contacts leads to a pseudo-inductance analogous to the RTD quantum inductance [3,4]. These effects are made more apparent with the fabrication of asymmetric contact structures and the appearance of electron hopping [8,11]. The paper will derive an expression for the pseudo-inductance and present evidence of electron hopping at extreme asymmetries.

References

- [1]C.A. Neugebauer & M.B. Webb "Electrical Conduction Mechanism in Ultrathin, Evaporated Metal Films" J Appl Phys 33 (1962) 74-82.
- [2]J.E. Morris & T. J. Coutts "Electrical Conduction in Discontinuous Metal Films; A Discussion" Thin Solid Films 47 (1977) 3-65.
- [3]J.E. Morris "Electron Transport in Discontinuous Metal Thin Films" Nano Express 3 014002, open access, (2022). doi:10.1088/2632-959X/ac550c
- [4]F. Wu & J.E. Morris "Modeling Conduction in Asymmetrical Discontinuous Thin Metal Films," Thin Solid Films 317 (1998) 178-182.
- [5]J.E. Morris "Recent Progress in Discontinuous Thin Metal Film Devices" Vacuum 50(1-2) May/June (1998) 107-113.
- [6]P.A. Tick & F.P. Fehlner "Electrical Behavior of Composite Discontinuous Films" J Appl Phys 43 (1972) 362-368.

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[7]B.W. Licznerski "An A.C. Equivalent Circuit for Thin Discontinuous Metal Films" Thin Solid Films 55 (1978) 361-374.

[8]J.E. Morris & W.-K. Chiu "Pseudo Inductive Effects and Electron Hopping in Discontinuous Metal Thin Films" in Proc. 31st Natl. Sympos. AVS, Reno, NV, Dec. 1984; J. Vac. Sci. Technol., 3(3) (1985).

[9]P.G. Borziak, V. Dyukov, A. Kostenko, Yu. Kulyupin & S. Nepijko "Electrical Conductivity in Structurally Inhomogeneous Discontinuous Metal Films" Thin Solid Films, 36 (1976) 21-24.

[10]S.A. Nepijko, D. Kutnyakhov, S.I. Protsenko, L.V. Odnodvoretz & G. Schonhense "Sensor and Microelectronic Elements Based on Nanoscale Granular Systems" J. Nanopart. Res., Art. no. 13:6263-6281, (2011). doi: 10.1007/s11051-011-0560-3.

[11]J.E. Morris "AC Effects in Asymmetric Discontinuous Metal Films" Thin Solid Films 193/194 (1990) 110-116.

KEYNOTE SPEAKERS



KN #18 - Wednesday, 8 July, 2026, 10:20-10:50 | Venue: VIP211 (躬行厅)

Chair: Yichen Liu, Southeast University, China

Federico Rosei

Professor

University of Trieste, Italy

Biography: Prof. Federico Rosei is Chair of Industrial Chemistry at the University of Trieste. Previously Professor and Director at INRS, Canada, he also held the Canada Research Chair and UNESCO Chair in energy-related materials. With 533 papers in Science, Nature Materials, Nature Photonics, and Angewandte Chemie (30,800 citations, H=91), he has delivered more than 380 invited talks worldwide and is a Fellow of the Royal Society of Canada, Academia Europaea, Australian Academy of Technology and Engineering, APS, and MRS. His distinctions include the Blaise Pascal Medal, Prix Marie-Victorin, Guggenheim Fellowship, and Nano Energy Award.

Speech Title: Energy Challenges From the Materials Perspective

Abstract: The quest for sustainable development dictates an urgent transition from fossil fuels to renewables. This presentation focuses on next generation (solar) energy technologies from a materials perspective. We study structure property/relationships in advanced materials, emphasizing multifunctional systems that exhibit several functionalities. Such systems are then used as building blocks for the fabrication of various emerging technologies. In particular, nanostructured materials synthesized via the bottom-up approach present an opportunity for future generation low cost and low energy intensive manufacturing of devices. We focus on recent developments in solar technologies, including third generation photovoltaics, solar hydrogen production, luminescent solar concentrators and other optoelectronic devices, highlighting the role and importance of critical raw materials.

KEYNOTE SPEAKERS



KN #19 - Wednesday, 8 July, 2026, 13:30-14:00 | Venue: Zhongda Lecture Hall (中大报告厅)
Chair: Ningmu Zou, Nanjing University, China

Oliver Schmidt

Professor
Chemnitz University of Technology, Germany

Biography: Professor Oliver G. Schmidt is the Scientific Director of the Research Center for Materials, Architectures and Integration of Nanomembranes (MAIN) and holds the Chair of Material Systems for Nanoelectronics at the Chemnitz University of Technology, Germany. He is Adjunct Professor of Nanophysics at Dresden University of Technology, Germany and Honorable Professor at both Fudan University and Changzhou University. He is an elected member of the German Academy of Science and Engineering and has co-founded the International Institute for Intelligent Nanorobots and Nanosystems at Fudan University. He received numerous international prizes and awards: Among them the Otto-Hahn Medal from the Max-Planck-Society in 2000, the Philip-Morris Research Award in 2002, the Carus-Medal from the German Academy of Natural Scientists Leopoldina in 2005, the International Dresden Barkhausen Award in 2013, the Gottfried Wilhelm Leibniz-Prize of the German Research Foundation in 2018, and an Advanced Grant of the European Research Council (ERC) in 2019. He is a pioneer in micromachining microrobotics, their biomedical applications and their potential for creating artificial life. He has made major scientific contributions to small scale energy storage devices, flexible electronics and 3D integrated microsystems. He has authored and co-authored > 900 papers with a citation index > 69.000 and an H-index of 135.

Speech Title: Assembly and Self-Assembly of Autonomous Microrobots - Following Nature's Principles

Abstract: Analogous to nature with its biological cells as self-assembled building blocks for myriads of differently programmed lifeforms, tiny modular microrobots make large leaps forward towards creating artificial life based on non-biologically assembled material modules [1].

The talk will show how the field has developed from tiny magnetic - yet increasingly more complex - remotely controlled actuator devices [2] to mass fabricated modular microrobots with on-board electronic control [3,4]. They are assembled from soft material scaffolds and tiny Si CMOS chiplets sitting between the folds, for a massive increase in information processing capabilities. They can communicate, dock together and self-assemble into larger entities like simple forms of non-biological organisms.

The technology is based on our previous work on self-folding [5,6] and self-locomoting [7] thin film electronic modules and addresses key challenges in the field of microrobotics, for instance on-board energy management [8,9] and the question of whether body or brain should come first when constructing microrobotic systems [10].

References

- [1] J. S. McCaskill, D. Karnaushenko, M. Zhu, O. G. Schmidt, Adv. Mater. 35, 2306344 (2023)
- [2] H. Xu, S. Wu, Y. Liu, X. Wang, A. K. Efremov, L. Wang, J. S. McCaskill, M. Medina-Sánchez, O. G. Schmidt, Nature Nanotechnol. 19, 494 (2024)

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- [3] Y. Lee, V. K. Bandari, J. S. McCaskill, P. Adluri, D. Karnaushenko, D. D. Karnaushenko, O. G. Schmidt, *Sci. Robot.* 10, eadu6007 (2025)
- [4] V. K. Bandari, Y. Lee, P. Adluri, D. Karnaushenko, D. D. Karnaushenko, J. S. McCaskill, O. G. Schmidt, *Adv. Intell. Syst.* <https://doi.org/10.48550/arXiv.2508.17390>
- [5] C. Becker, B. Bao, D. D. Karnaushenko, V. K. Bandari, B. Rivkin, Z. Li, M. Faghih, D. Karnaushenko, O. G. Schmidt, *Nature Comm.* 13, 2121 (2022)
- [6] L. Mercés, L. M. Minatogau Ferro, A. Thomas, D. D. Karnaushenko, Y. Luo, A. I. Egunov, W. Zhang, V. K. Bandari, Y. Lee, J. S. McCaskill, M. Zhu, O. G. Schmidt, D. Karnaushenko, *Adv. Mater.* 36, 2313327 (2024)
- [7] V. K. Bandari, Y. Nan, D. Karnaushenko, Y. Hong, B. Sun, F. Striggow, D. D. Karnaushenko, C. Becker, M. Faghih, M. Medina-Sanchez, F. Zhu, O. G. Schmidt, *Nature Electron.* 3, 172 (2020)
- [8] M. Zhu, O. G. Schmidt, *Nature* 589, 195 (2021)
- [9] J. S. McCaskill, V. K. Bandari, S. Schmidt, O. G. Schmidt, *Nature Rev. Mater.* 11, 393 (2026)
- [10] O. G. Schmidt, V. K. Bandari, J. S. McCaskill, *Nature Electron.* 9, 2 (2026)

KEYNOTE SPEAKERS



KN #20 - Wednesday, 8 July, 2026, 13:30-14:00 | Venue: VIP201 (洁行厅)

Chair: Jiaqi Liu, City University of Hong Kong, China

Jianfeng Zang

Professor

Huazhong University of Science and Technology, China

Biography: Professor Jianfeng Zang is Huazhong Scholarship Chief Professor in Huazhong University of Science and Technology, Distinguished Professor of the Ministry of Education's Changjiang Scholars Program. His research focuses on innovative medical devices enabled by intelligent soft materials for medical-engineering convergence. He has published over 90 papers in journals including Nature, Nature Biomedical Engineering, Nature Materials, and Science Robotics. He was elected as a Fellow of the Royal Society of Chemistry (FRSC). He has received the Scientist Medal of the Year from the International Association of Advanced Materials and the Second Prize of the Hubei Provincial Natural Science Award. His research achievements have been selected in several lists including "Chip 2024 Top Ten Advances in Chip Science in China", "2024 Top Ten Advances in National Medical-Engineering Integration", "2024 Top Ten Advances in Brain-Computer Interface in China", "2024 Top Ten Scientific and Technological Advances in Hubei Province".

Speech Title: Implantable Soft Acoustic Hydrogels for Ultrasound Sensors on Monitoring Physiological Signals

Abstract: Recent advances in soft materials, robotics, and manufacturing technologies have inspired many innovations in biomedical engineering like wearable electronics, implantable sensors, and new intervention methods. Soft acoustic materials possess extraordinary acoustic properties for long-distance wireless sensing and communication without the addition of electronic components or metal electrodes. To address the grand challenges in understanding the interfaces between human and medical devices, I will show our recent progress in the development of the medical devices using soft acoustic materials. Examples will be involved in this talk include: metagel ultrasonic sensor for wireless monitoring of physiological signals like strain, pressure, temperature, pH. Achieving multimodal and decoupled physiological signals is beneficial for an intricate and precise depiction of bodily health. Besides, wireless sensor in the form of embedded ultrasonic soft sensors (EUSS) is integrated with miniature machine, magnetic actuators, to address sensing-actuation incompatibility, enabling precise robotic feedback control, drug dosing, and physiological monitoring in vivo.

PARALLEL SESSIONS

D2-MR02-AM / AI for Nanomaterials Design and Fabrication - I

Monday, 6 July, 2026, 10:50-11:50 | Zhongda Lecture Hall / 中大报告厅

Session Chair: Qisheng Wu, Suzhou National Laboratory

Time	Type	ID	Submission Details
10:50-11:10	INVITED	135	Title: AI-Driven Design of Solid-State Electrolyte Materials and Interphases Author List: Tingzheng Hou Presenter: <i>Tingzheng Hou</i> , Tsinghua University
11:10-11:30	INVITED	138	Title: AI-Driven Discovery of Active Motifs in Energy Materials Author List: Kyunghun Lee, Hyunjin Lee, Yonghyuk Lee, Taehun Lee Presenter: <i>Taehun Lee</i> , Daegu Gyeongbuk Institute of Science & Technology
11:30-11:50	INVITED	165	Title: Regulating Surface Faceting as a Kinetic Switch for Core-shell Nanoparticle Crystallization Pathways Author List: Zhewen Zhu, Yizhou Zhu Presenter: <i>Yizhou Zhu</i> , Westlake University

D2-MR02-PM-A / AI for Nanomaterials Design and Fabrication - II

Monday, 6 July, 2026, 14:00-15:20 | Zhongda Lecture Hall / 中大报告厅

Session Chair: Tingzheng Hou, Tsinghua University

Time	Type	ID	Submission Details
14:00-14:20	INVITED	434	Title: Epitaxy of Two-Dimensional Materials Growth Author List: Feng Ding Presenter: <i>Feng Ding</i> , Suzhou National Laboratory
14:20-14:40	INVITED	309	Title: The Recent Advances of MAGUS on Low-Dimensional and Confined Systems Author List: Jian Sun, Chi Ding Presenter: <i>Jian Sun</i> , Nanjing University
14:40-15:00	INVITED	285	Title: A Full-Stack Atomistic Simulation and AI Toolkit for Electrolytes Author List: Sheng Gong Presenter: <i>Sheng Gong</i> , ByteDance Seed
15:00-15:20	INVITED	239	Title: Digital Twin Platform for Semiconductor Material Discovery and Growth Simulation Author List: Shuaihua Lu Presenter: <i>Shuaihua Lu</i> , City University of Hong Kong

PARALLEL SESSIONS

D2-MR02-PM-B / AI for Nanomaterials Design and Fabrication - III

Monday, 6 July, 2026, 15:50-17:50 | Zhongda Lecture Hall / 中大报告厅

Session Chair: Yizhou Zhu, Westlake University

Session Chair: Chen Shen, Suzhou National Laboratory

Time	Type	ID	Submission Details
15:50-16:10	INVITED	298	Title: Machine Learning Potentials-Accelerated Microscopic Mechanism Study of Complex Reaction Processes Author List: Manyi Yang Presenter: <i>Manyi Yang</i> , Nanjing University
16:10-16:30	INVITED	304	Title: Theory of Sigma Bond Resonance in Flat Boron Materials Author List: Lu Qiu, Feng Ding Presenter: <i>Lu Qiu</i> , City University of Hong Kong
16:30-16:50	INVITED	313	Title: An Intelligent Closed-Loop Framework for Semiconductor Materials Design Author List: Chen Shen Presenter: <i>Chen Shen</i> , Suzhou National Laboratory
16:50-17:10	INVITED	379	Title: Beyond Static Convergence: Uncertainty-Driven Active Learning for Reliable Long-Scale Atomistic Dynamics for Large Systems Author List: Hongxia Hao Presenter: <i>Hongxia Hao</i> , Shanghai Artificial Intelligence Laboratory
17:10-17:30	INVITED	326	Title: Machine Learning Assisted 2D Materials Design based on Small Data Author List: Qionghua Zhou Presenter: <i>Qionghua Zhou</i> , Southeast University
17:30-17:50	INVITED	155	Title: Data-Rich and Flexible Autonomous Labs for Accelerated Nanomaterials Discovery Author List: Milad Abolhasani Presenter: <i>Milad Abolhasani</i> , North Carolina State University

PARALLEL SESSIONS

D2-MR03-AM / Selected Areas in Nano-Scale Communications

Monday, 6 July, 2026, 10:50-11:50 | VIP201 / 洁行厅

Session Chair: Lin Lin, Tongji University

Session Chair: Yue Sun, Chengdu University of Technology

Time	Type	ID	Submission Details
10:50-11:10	INVITED	243	Title: A Dual Modal Analysis Framework for Vagus Nerve Stimulation Evoked Gastrointestinal Responses in Rabbits Author List: Xinyao Jia, Leyi Zhao, Zhi Huang, Ying Qin, Junfang Zhang, Ling Zhu, Hu Pu, Lin Lin Presenter: <i>Lin Lin</i>, Tongji University
11:10-11:30	INVITED	247	Title: Cross-Limb Neural Compensation via Intent Decoding for Personalized Gait Restoration Author List: Zhi Deng, Zuo Li, Jiayu Li, Leyi Zhao, Bo Pang, Ying Qin, Junfang Zhang, Ling Zhu, Hu Pu, Lin Lin Presenter: <i>Lin Lin</i>, Tongji University
11:30-11:50	INVITED	293	Title: A Swarm Intelligence Triadic Framework for Hybrid In Vivo Computation Author List: Baoyu Ren, Yue Sun, Yifan Chen Presenter: <i>Yue Sun</i>, Chengdu University of Technology

D2-MR03-PM-A / Recent Advances in Heterogeneous Integration and Chiplets

Monday, 6 July, 2026, 14:00-15:25 | VIP201 / 洁行厅

Session Chair: Si-Ping Gao, Nanjing University of Aeronautics and Astronautics

Session Chair: Boping Wu, JCET Group

Session Chair: Yu Han, Harbin Institute of Technology

Time	Type	ID	Submission Details
14:00-14:20	INVITED	325	Title: From Wafer to System: Advanced Packaging Solutions for Heterogeneous Integration and Chiplets Author List: Boping Wu Presenter: <i>Boping Wu</i>, JCET Group
14:20-14:40	INVITED	351	Title: Communication-Centric Chiplet Architectures for Scalable AI Training Author List: Lingxiang Yin Presenter: <i>Lingxiang Yin</i>, Nanjing University of Aeronautics and Astronautics

PARALLEL SESSIONS

14:40-14:55	ORAL	74	Title: Cs _{0.05} (FA _{0.98} MA _{0.02}) _{0.95} Pb(I _{0.98} Br _{0.02}) ₃ -CMOS Image Sensor for Broadband (UV-Vis-NIR) Photodetection with 99.997% Pixel Functionality Author List: Yunfei Xie, Peng Sun, Xuan Ye, Zijian Pan, Jiasheng Li, Hao Ning, Zhi-Xiang Zhang, Zongwen Li, Qianqian Zhang, Yongliang Xie, Xiaochen Wang, Yan Jiang, Srikrishna Bodepudi Presenter: <i>Yunfei Xie</i> , Zhejiang University
14:55-15:10	ORAL	207	Title: A Low-Noise CMOS Readout Circuit for Graphene/Ge Photodetector Arrays Author List: Mingyi Zhou, Qianqian Zhang, Zhixiang Zhang, Yuxin Ye, Muhammad Malik, Guanyu Liu, Dianyu Qi, Yang Xu Presenter: <i>Mingyi Zhou</i> , Zhejiang University
15:10-15:25	ORAL	395	Title: Multiple Die Management in Chiplet-based Architecture Author List: Yang Yan, Alexander Yu Presenter: <i>Yang Yan</i> , AMD

D2-MR03-PM-B / Nanoarchitectures: From Assembly to Applications

Monday, 6 July, 2026, 15:50-18:00 | VIP201 / 洁行厅

Session Chair: Yongfeng Mei, Fudan University

Session Chair: Wen Huang, Hefei University of Technology

Time	Type	ID	Submission Details
15:50-16:10	INVITED	525	Title: Phosphorus Based Anode Materials for Fast-Charge Li-ion Batteries Author List: Hengxing Ji Presenter: <i>Hengxing Ji</i> , University of Science and Technology of China
16:10-16:30	INVITED	526	Title: SiGe Nanostructures for Quantum Computing Author List: Jianjun Zhang Presenter: <i>Jianjun Zhang</i> , Institute of Physics, Chinese Academy of Sciences
16:30-16:45	ORAL	289	Title: Large-Scale Integrated Quantum Photonic Circuits on Lithium Niobate Platform Author List: Jiaxiang Zhang Presenter: <i>Jiaxiang Zhang</i> , Shanghai Institute of Microsystem and Information Science, Chinese Academy of Science
16:45-17:00	ORAL	357	Title: Heterogeneous Integration Technology for Flexible Power Amplifiers Author List: Yuehang Xu, Wenhao Zheng Presenter: <i>Yuehang Xu</i> , University of Electronic Science and Technology of China

PARALLEL SESSIONS

17:00-17:15	ORAL	459	Title: Three-Dimensional Photodetectors Based on Rolled-Up Nanomembranes: From Energy Localization to Neural-Network-Assisted Angle Detection Author List: Gaoshan Huang, Ziyuzhang, Mingze Ma, Binmin Wu, Yongfeng Mei Presenter: <i>Gaoshan Huang</i>, Fudan University
17:15-17:30	ORAL	406	Title: Self-Rolled-Up Membrane Motion Characterization via A Robust Microwave Radar Interferometry Technique Author List: Keke Zheng, Changzhan Gu Presenter: <i>Keke Zheng</i>, Shanghai Jiao Tong University
17:30-17:45	ORAL	433	Title: Architected Hybrid Micro-Nanostructures for Optical Mode Control Author List: Libo Ma Presenter: <i>Libo Ma</i>, Leibniz IFW-Dresden
17:45-18:00	ORAL	55	Title: New Developments in Topological, Chiral and Reconfigurable Superconductor Nanoarchitectures Author List: Vladimir M. Fomin Presenter: <i>Vladimir M. Fomin</i>, Leibniz Institute for Solid State and Materials Research (IFW) Dresden

PARALLEL SESSIONS

D2-MR04-AM / Single Photon and Single Electron with 2D Materials

Monday, 6 July, 2026, 10:50-11:50 | VIP210 / 以行厅

Session Chair: Antonio Di Bartolomeo, Università degli Studi di Salerno

Session Chair: Deyi Fu, Xiamen University

Time	Type	ID	Submission Details
10:50-11:10	INVITED	236	Title: Valley Qubits and Qutrits in 2D Nanostructures Author List: Jaroslaw Pawlowski Presenter: <i>Jaroslaw Pawlowski</i> , Wroclaw University of Science and Technology
11:10-11:30	INVITED	317	Title: Improving Single Photon Emission From vdW Materials via Atomic Engineering Author List: Shengxi Huang Presenter: <i>Shengxi Huang</i> , Rice University
11:30-11:50	INVITED	136	Title: On Demand Single Photon Sources With Two-Dimensional Materials Author List: Carlos Antón Solanas Presenter: <i>Antón Solanas</i> , Universidad Autonoma de Madrid

D2-MR04-PM-A / 2D Materials Synthesis and Inspection

Monday, 6 July, 2026, 14:00-15:20 | VIP210 / 以行厅

Session Chair: Fengqiu Wang, Nanjing University

Time	Type	ID	Submission Details
14:00-14:20	INVITED	457	Title: Wafer-Scale MOCVD Growth and Low-Resistance Ohmic Contacts for Ideal 2D TMD Semiconductor Transistors Author List: Taewan Kim Presenter: <i>Taewan Kim</i> , University of Seoul
14:20-14:40	INVITED	458	Title: Advanced Products for Wafer-Scale Optical Characterization of 2D Materials Author List: Thomas Dieing, Ute Schmidt, Thomas Meyer, Ding Shuo Presenter: <i>Thomas Dieing</i> , Oxford Instruments
14:40-15:00	INVITED	456	Title: Tip-Enhanced Nano-Spectroscopy and Imaging of 2D Semiconductors for Applications in Semiconductor Metrology and Inspection Author List: Kyoung-Duck Park Presenter: <i>Kyoung-Duck Park</i> , Pohang University of Science and Technology
15:00-15:20	INVITED	375	Title: van der Waals-Coupled Chalcogenides for Nanoelectronics Author List: Joonki Suh Presenter: <i>Joonki Suh</i> , Korea Advanced Institute of Science and Technology

PARALLEL SESSIONS

D2-MR04-PM-B / 2D Materials Synthesis and Inspection & Heterostructures with Silicon

Monday, 6 July, 2026, 15:50-17:20 | VIP210 / 以行厅

Session Chair: Kyoung-Duck Park, Pohang University of Science and Technology

Session Chair: Srikrishna Chanakya Bodepudi, Zhejiang University

Time	Type	ID	Submission Details
15:50-16:10	INVITED	449	Title: Novel Ultrafast Lasers Enabling New Modalities for Fast Nonlinear Imaging Author List: Yafei Meng Presenter: <i>Yafei Meng</i> , NPI Lasers
16:10-16:30	INVITED	430	Title: Thick-Film Perovskites for X-Ray Detection Author List: Khurram Shehzad, Nasir Ali Presenter: <i>Khurram Shehzad</i> , Silesian University of Technology
16:30-16:50	INVITED	447	Title: Process and Equipment Platform for Scalable 2D Semiconductor Growth Author List: Kibum Kang Presenter: <i>Kibum Kang</i> , Korea Advanced Institute of Science and Technology
16:50-17:05	ORAL	256	Title: Robust Epitaxy of Single-Crystal Transition-Metal Dichalcogenides on Lanthanum-Passivated Sapphire Author List: Xilu Zou, Yuanyuan Zhao, Dongxu Fan, Taotao Li, Feng Ding, Xinran Wang Presenter: <i>Xilu Zou</i> , Nanjing University
17:05-17:20	ORAL	412	Title: A Unified Broadband Optoelectronic Platform based on 2D Material Integrated Silicon photodetectors for Single-Pixel Imaging and Computing Author List: Xinyi Xu, Jiasheng Li, Zongwen Li, Jian Chai, Yang Xu Presenter: <i>Xinyi Xu</i> , Zhejiang University

PARALLEL SESSIONS

D2-MR05-AM / Perovskite Optoelectronics & Nanophotonics

Monday, 6 July, 2026, 10:50-12:05 | VIP211 / 躬行厅

Session Chair: Tiankai Zhang, Southeast University

Session Chair: Guixiang Li, Southeast University

Time	Type	ID	Submission Details
10:50-11:10	INVITED	522	Title: Semiconductor Nanowire Array Materials and Devices for Optoelectronic Applications Author List: Lan Fu Presenter: <i>Lan Fu</i> , The Australian National University
11:10-11:30	INVITED	272	Title: Accelerated Aging of Perovskite Solar Cells Author List: Xiaoming Zhao Presenter: <i>Xiaoming Zhao</i> , Nanjing University of Aeronautics and Astronautics
11:30-11:50	INVITED	396	Title: High-Performance Perovskite/Silicon Tandem Solar Cells Via a Rationally Designed Packing of Self-Assembled Molecules Author List: Wenbao Xu, Tao Zhu, Chongwen Li Presenter: <i>Wenbao Xu</i> , Southeast University
11:50-12:05	ORAL	88	Title: A Self-Aligned nMAG/3D-Si Hybrid Nanostripe Photodetector for Polarization-Sensitive Infrared Detection Author List: Yunfei Xie, Xuan Ye, Zijian Pan, Srikrishna Bodepudi, Wenzhang Fang, Bin Yu, Yang Xu Presenter: <i>Zijian Pan</i> , Zhejiang University

D2-MR05-PM-A / Silicon/2D Materials Heterostructures

Monday, 6 July, 2026, 14:00-15:20 | VIP211 / 躬行厅

Session Chair: Khurram Shehzad, Silesian University of Technology

Session Chair: Srikrishna Chanakya Bodepudi, Zhejiang University

Time	Type	ID	Submission Details
14:00-14:20	INVITED	137	Title: Dielectrics for 2D Semiconductors Author List: Yan Wang Presenter: <i>Yan Wang</i> , University of Cambridge
14:20-14:40	INVITED	281	Title: Computational Pixel Sensor and its Applications in Image Sensors Author List: Kai Wang Presenter: <i>Kai Wang</i> , Sun Yat-sen University
14:40-15:00	INVITED	301	Title: Dimensionally Hybrid Heterostructures: from Hetero-integration to Nanoscale Functional Mapping Author List: Michele Zendrini, Claire Blaga, Matilde Cantele, Julia Marhic, Kamil Wodzislowski, Mitali Banerjee, Anna Fontcuberta I Morral, Valerio Piazza Presenter: <i>Valerio Piazza</i> , École polytechnique fédérale de Lausanne

PARALLEL SESSIONS

15:00-15:20	INVITED	382	Title: Dipole Interactions in SAW Gas Sensors Hybrid Structure 128deg YX LiNbO3 With SiO2 Author List: W.Jakubik, C.Caliendo, M.Benetti, D.Cannata, H. Szczotka, N. Krzystolik, J.Wrotniak Presenter: <i>Hubert Szczotka</i> , Silesian University of Technology
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D2-MR05-PM-B / Probabilistic Computing, Nanoelectronics & Heterogeneous Integration

Monday, 6 July, 2026, 15:50-17:50 | VIP211 / 躬行厅

Session Chair: Jienan Chen, University of Electronic Science and Technology of China

Session Chair: Kuncai Zhong, Hunan University

Time	Type	ID	Submission Details
15:50-16:10	INVITED	201	Title: Fast and Area-Efficient Minimal AND-Inverter Tree Synthesis for Stochastic Computing Author List: Jiangyuan Wang, Mingyu Cheng, Kuncai Zhong, Weikang Qian Presenter: <i>Kuncai Zhong</i> , Hunan University
16:10-16:30	INVITED	146	Title: STSCA: Scalable Tensor-Train Stochastic Computing With Stabilized Arithmetic for High-Dimensional Nonlinear Operators Author List: Xincheng Feng, Tong Xie, Ngai Wong, Meng Li Presenter: <i>Meng Li</i> , Peking University
16:30-16:50	INVITED	173	Title: Stochastic Computing for ADC-Less Computing in Memory: Modeling and Algorithm Author List: Kuo Liao, Jienan Chen, Ying Pan, Junshuo Wang Presenter: <i>Jienan Chen</i> , University of Electronic Science and Technology of China
16:50-17:05	ORAL	162	Title: RePreSC: Enabling Reconfigurable Precision in Stochastic Computing Author List: Zexi Li, Weikang Qian Presenter: <i>Zexi Li</i> , Shanghai Jiao Tong University
17:05-17:20	ORAL	161	Title: Operational Domain Sketching for Silicon Dangling Bond Logic Author List: Jan Drewniok, Marcel Walter, Robert Wille Presenter: <i>Marcel Walter</i> , Technical University of Munich
17:20-17:35	ORAL	191	Title: Holistic Physical Design for Silicon Atomic Logic Author List: Willem Lambooy, Jan Drewniok, Marcel Walter, Robert Wille Presenter: <i>Marcel Walter</i> , Technical University of Munich
17:35-17:50	ORAL	58	Title: A Novel Approach to Secure Execution in Embedded Systems: Custom ISA and Compiler Binding Author List: Maria Ayub, Sajid Gul Khawaja, Haroon Waris Presenter: <i>Maria Ayub</i> , National University of Science and Technology

PARALLEL SESSIONS

D2-MR06-AM / Modeling and Simulation Tools for Emerging Nanoscale Circuits - I

Monday, 6 July, 2026, 10:50-11:50 | VIP208 / 博学厅

Session Chair: You Wang, Nanjing University of Aeronautics and Astronautics

Session Chair: Yifan Yuan, Nanjing University of Aeronautics and Astronautics

Time	Type	ID	Submission Details
10:50-11:10	INVITED	126	Title: Modeling and Analysis of Built-In Self-Repair for OTP-MRAM Author List: Cheng He, Jiongzhe Su, Zeying Ding, Hao Cai Presenter: <i>Cheng He</i> , Southeast University
11:10-11:30	INVITED	145	Title: High-Density In-Memory Ising Computing Enabled by VGSOT-MTJ Based Spin Model Author List: Wentao Huang, Kaili Zhang, Youguang Zhang, Weisheng Zhao, Lang Zeng, Deming Zhang Presenter: <i>Kaili Zhang</i> , State Key Laboratory of Spintronics, Hangzhou International Innovation Institute, Beihang University, Hangzhou
11:30-11:50	INVITED	170	Title: Compact Probabilistic Modeling of Voltage Controlled MTJ towards Efficient Ising Machines Author List: Hongjie Yin, Lirida Naviner, Yantong Di, Haoran Du, Yaoru Hou, Hao Cai Presenter: <i>Hongjie Yin</i> , Southeast University

D2-MR06-PM-A / Modeling and Simulation Tools for Emerging Nanoscale Circuits - II

Monday, 6 July, 2026, 14:00-15:20 | VIP208 / 博学厅

Session Chair: You Wang, Nanjing University of Aeronautics and Astronautics

Session Chair: Yifan Yuan, Nanjing University of Aeronautics and Astronautics

Time	Type	ID	Submission Details
14:00-14:20	INVITED	180	Title: TCAD-GPT: Multimodal Large Language Model Framework for Complete and Rapid TCAD Simulation Author List: Gongteng Xiao, Haobo Huang, Tianye Yu, Yudi Zhao, Shisheng Xiong, Zhaori Bi, Xuan Zeng, Ye Lu Presenter: <i>Ye Lu</i> , Fudan University
14:20-14:40	INVITED	186	Title: Unified Modeling of Small-Signal Parameters in Nanosheet FETs for Sub-5 nm RF IC Design Author List: Linlin Cai, Chuhao Chen, Minghui Dong, Wangyong Chen Presenter: <i>Chuhao Chen</i> , Sun Yat-sen University
14:40-15:00	INVITED	241	Title: Enhancing the Switching Ratio of Hafnia-based Ferroelectric Tunnel Junctions via Defect Engineering Author List: Zhijiang Wang, Zili Tang, Xing Zhang, Xiaoyan Liu, Fei Liu Presenter: <i>Fei Liu</i> , Peking University

PARALLEL SESSIONS

15:00-15:20	INVITED	354	Title: Semi-Classical Monte Carlo Carrier Transport Simulation for Advanced Devices and Emerging Materials Author List: Jiwon Chang Presenter: <i>Jiwon Chang</i> , Yonsei University
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D2-MR06-PM-B / Merging Life Science with Physical Science for New Functional Devices - I

Monday, 6 July, 2026, 15:50-17:50 | VIP208 / 博学厅

Session Chair: Jean-Pierre Leburton, University of Illinois Urbana-Champaign

Session Chair: Binquan Luan, Suzhou Institute of Biomedical Engineering and Technology, Chinese Academy of Sciences

Time	Type	ID	Submission Details
15:50-16:10	INVITED	336	Title: Advanced Silicon Chip Technology for Non-Invasive Single-Molecule Trapping and Analysis Author List: Zhen Zhang Presenter: <i>Zhen Zhang</i> , Uppsala University
16:10-16:30	INVITED	401	Title: Resolving Single-Protein Conformational Dynamics Using Nanoaperture Optical Tweezers Author List: Cuifeng Ying Presenter: <i>Cuifeng Ying</i> , Nottingham Trent University
16:30-16:50	INVITED	393	Title: Ultrafine Metallic Nanopores Author List: Qing Chen Presenter: <i>Qing Chen</i> , Hong Kong University of Science and Technology
16:50-17:10	INVITED	511	Title: Photothermal Solid-State Nanopores for Nanofabrication and Single-Molecule Biomolecular Analysis Author List: Hirohito Yamazaki Presenter: <i>Hirohito Yamazaki</i> , Nagaoka University of Technology
17:10-17:30	INVITED	442	Title: Nanopore-Based Dna and Protein Sensing at the Single-Molecule Level Author List: Zhouxiang Ji Presenter: <i>Zhouxiang Ji</i> , Xidian University
17:30-17:50	INVITED	140	Title: Nanoconfinement-Controlled Electrochemistry: Nanopores Beyond Sequencing Author List: Yi-Tao Long Presenter: <i>Yi-Tao Long</i> , Nanjing University

PARALLEL SESSIONS

D2-MR07-AM / First-Principles Engineering of Novel Materials and Devices - I

Monday, 6 July, 2026, 10:50-11:50 | VIP206 / 向学厅

Session Chair: Shiyu Chen, Fudan University

Session Chair: Roza Kotlyar, Kepler Computing Inc

Time	Type	ID	Submission Details
10:50-11:10	INVITED	68	Title: Computational Investigation of Quantum Memory Logic Implemented with Electron Spins in Silicon Devices Author List: Hoon Ryu Presenter: <i>Hoon Ryu</i> , Kumoh National Institute of Technology
11:10-11:30	INVITED	403	Title: A DFT and Quantum Transport Study of Electron Transport Properties in Doped Germanium Thin Films Author List: Luiz Felipe Aginsky, Till Zellweger, Diego Milardovich, Alexandros Emboras, Mathieu Luisier Presenter: <i>Luiz Felipe Aginsky</i> , University of Glasgow
11:30-11:50	INVITED	318	Title: Multiscale Electro-Thermal Simulation of Stacked Transistors: From Quantum Transport to Cell-Level Analysis Author List: Lang Zeng, Hongwei Zhou, Suteng Zhao Presenter: <i>Lang Zeng</i> , Beihang University

D2-MR07-PM-A / First-Principles Engineering of Novel Materials and Devices - II

Monday, 6 July, 2026, 14:00-15:20 | VIP206 / 向学厅

Session Chair: Shiyu Chen, Fudan University

Session Chair: Roza Kotlyar, Kepler Computing Inc

Time	Type	ID	Submission Details
14:00-14:20	INVITED	365	Title: Topological Insulator Field-Effect Transistors: From Performance Benchmarking to Low-Power Operation Author List: Yeonghun Lee Presenter: <i>Yeonghun Lee</i> , Incheon National University
14:20-14:40	INVITED	297	Title: Electrically Controlled Spin Transport in 2D Multiferroic Materials and Devices: From vdW Heterostructures to Fractional Quantum Multiferroics Author List: Zhi-Xin Guo, Xian Zhang, Maoqiang Dong, Bang Liu, Xin-Gao Gong Presenter: <i>Zhixin Guo</i> , Xi'an Jiaotong University
14:40-15:00	INVITED	464	Title: Physics-Based Modeling of Hysteresis in 2D-Material Transistors Author List: Tibor Grasser Presenter: <i>Tibor Grasser</i> , TU Wien

PARALLEL SESSIONS

15:00-15:20	INVITED	329	Title: Large-Scale Quantum Transport Simulation for Co Film Author List: Ke Xia Presenter: <i>Ke Xia</i> , Southeast University
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D2-MR07-PM-B / First-Principles Engineering of Novel Materials and Devices - III

Monday, 6 July, 2026, 15:50-17:40 | VIP206 / 向学厅

Session Chair: Shiyu Chen, Fudan University

Session Chair: Roza Kotlyar, Kepler Computing Inc

Time	Type	ID	Submission Details
15:50-16:10	INVITED	333	Title: Universal Role of Dopant-VGa Complexes Induced Carrier Suppression in Si/Ge/Sn/Zr-Doped Author List: Zhaofu Zhang, Taiqiao Liu, Xinglin Liu, Qiangmin Wei Presenter: <i>Zhaofu Zhang</i> , Wuhan University
16:10-16:30	INVITED	342	Title: Quantization Effects at Graphene Edges in Nanoribbon Field Emitters Author List: Yeong Jin Ahn, Cheul-Hyun Yoon, Kang Gon Son, Chae Ho Won, Byoung Don Kong Presenter: <i>Byoung Don Kong</i> , Pohang University of Science and Technology
16:30-16:50	INVITED	356	Title: Modeling Quantum Transport in Silicon Nanostructures Author List: Nobuya Mori Presenter: <i>Nobuya Mori</i> , Osaka University
16:50-17:10	INVITED	363	Title: Interplay Between Oxygen Diffusion and Polarization Switching in Defect-Free Hafnia Ferroelectrics Author List: Xabier Diaz De Cerio, Iñigo Robredo-Magro, Jorge Íñiguez-González Presenter: <i>Xabier Diaz De Cerio Palacio</i> , Luxembourg Institute of Science and Technology
17:10-17:25	ORAL	374	Title: Computation-Driven Discovery of Zero-Dimensional Metal Halides with Efficient Self-Trapped Exciton Emission Author List: Jiahao Xie, Zewei Li, Jun Zhang, Hanming Li, Lijun Zhang Presenter: <i>Jiahao Xie</i> , University of Toledo
17:25-17:40	ORAL	114	Title: Engineering Titanium Oxide Films to Achieve High Performance Photomemristor Devices Author List: Marina Sparvoli, José F. D. Chubaci, Henrique C. Gulino, Pedro H. Duarte, Ricardo Rangel, Bianca J. Mendonça, Gilson S. Goveia, Daniel Fidelis, Luis Zambom, Ronaldo D. Mansano Presenter: <i>Marina Sparvoli</i> , Universidade de São Paulo

PARALLEL SESSIONS

D2-MR08-AM / Advanced Optoelectronic Materials and Devices - I

Monday, 6 July, 2026, 10:50-11:50 | VIP205 / 思学厅

Session Chair: Wei Cao, University of California Santa Barbara

Session Chair: Haiding Sun, University of Science and Technology of China

Time	Type	ID	Submission Details
10:50-11:10	INVITED	157	Title: Organic Semiconductor Doping Technology and Device Applications Author List: Yuanyuan Hu Presenter: <i>Yuanyuan Hu</i> , Hunan University
11:10-11:30	INVITED	224	Title: Homogeneous Integration of Diameter-Engineered Carbon Nanotube Thin-Film Transistors for Emerging Displays Author List: Yuan Kai, Anqi Zheng, Yujia Gong, Pujian Lin, Yuting Zhang, Yu Cao, Jiahao Kang Presenter: <i>Jiahao Kang</i> , Peking University
11:30-11:50	INVITED	338	Title: Trap-Induced Luminescence in Organic Semiconductors Author List: Ryota Kabe Presenter: <i>Ryota Kabe</i> , Okinawa Institute of Science and Technology Graduate University

D2-MR08-PM-A / Advanced Optoelectronic Materials and Devices - II

Monday, 6 July, 2026, 14:00-15:15 | VIP205 / 思学厅

Session Chair: Wei Cao, University of California Santa Barbara

Session Chair: Haiding Sun, University of Science and Technology of China

Time	Type	ID	Submission Details
14:00-14:20	INVITED	343	Title: III-Nitrides Integrated Ultraviolet Optoelectronics for Communications and Spectral Imaging Author List: Haiding Sun Presenter: <i>Haiding Sun</i> , University of Science and Technology of China
14:20-14:40	INVITED	347	Title: Two-dimensional Bi ₂ O ₂ S Nanosheets for Superlinear Photodetection Beyond the Blinding Limit Author List: Xu He, Wei Liu Presenter: <i>Wei Liu</i> , Fujian Institute of Research on the Structures, Chinese Academy of Sciences
14:40-15:00	INVITED	308	Title: High Performance Long Wavelength InGa _N Micro-LEDs Achieving 1.01 GHz Bandwidth Author List: Hongjian Li Presenter: <i>Hongjian Li</i> , Xiamen University

PARALLEL SESSIONS

15:00-15:15	ORAL	400	Title: InGaAs/InP Quantum Well Nanowire Array Based Mid-Infrared Photodetectors Author List: Yue Bian, Fanlu Zhang, Zhe Li, Dawei Liu, Jingshi Yan, Gilberto A Umana Membreno, Wenwu Pan, Wen Lei, Lorenzo Faraone, Li Li, Mykhaylo Lysevych, Dragomir Neshev, Hark Hoe Tan, Chennupati Jagadish, Lan Fu Presenter: Lan Fu, The Australian National University
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D2-MR08-PM-B / Nanoelectromechanical Systems (NEMS)

Monday, 6 July, 2026, 15:50-17:50 | VIP205 / 思学厅

Session Chair: Yansong Yang, Hong Kong University of Science and Technology

Session Chair: Hao Jia, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences

Time	Type	ID	Submission Details
15:50-16:10	INVITED	310	Title: MEMS Acoustic Waves for Communication Author List: Yansong Yang Presenter: Yansong Yang, Hong Kong University of Science and Technology
16:10-16:30	INVITED	444	Title: NEMS-Based Sensing Using Two-Dimensional Non-Layered Materials Author List: Jiankai Zhu Presenter: Jiankai Zhu, University of Electronic Science and Technology of China
16:30-16:50	INVITED	473	Title: Material Characterization and Frequency Control in Two-Dimensional Nanoelectromechanical Systems Author List: Bo Xu Presenter: Bo Xu, University of Electronic Science and Technology of China
16:50-17:10	INVITED	474	Title: Laser Interferometry for NEMS Resonators: Applications and Optimization Author List: Xu-Qian Zheng Presenter: Xuqian Zheng, Nanjing University of Posts and Telecommunications
17:10-17:30	INVITED	475	Title: Modulating Resonance Mode Sequencing in Nanomechanical Resonators Author List: Luming Wang Presenter: Luming Wang, University of Electronic Science and Technology of China
17:30-17:50	INVITED	476	Title: MEMS Sensors for Differential Thermal Analysis Author List: Hao Jia Presenter: Hao Jia, Shanghai Institute of Microsystem and Information Technology

PARALLEL SESSIONS

D2-MR09-AM / Functional Soft Materials for Bio-Integrated Nanomedicine

Monday, 6 July, 2026, 10:50-12:05 | VIP203 / 恒学厅

Session Chair: Xinge Yu, City University of Hong Kong

Session Chair: Jiaqi Liu, City University of Hong Kong

Time	Type	ID	Submission Details
10:50-11:10	INVITED	322	Title: Semiconducting Hydrogel Circuits and Applications Author List: Ting Lei Presenter: <i>Ting Lei</i> , Peking University
11:10-11:30	INVITED	383	Title: Ultrasound-Driven Contact Electrification via Acoustic Impedance Matching Author List: Hong-Joon Yoon Presenter: <i>Hong-Joon Yoon</i> , Gachon University
11:30-11:50	INVITED	465	Title: Application of Intelligent Biointerfaces to Translational Neuro-Biomedicine Author List: Yiyuan Yang Presenter: <i>Yiyuan Yang</i> , National University of Singapore
11:50-12:05	ORAL	438	Title: Smart Theranostic Skin Dressing for ROS Sensing and Scavenging Author List: Samia Kanwal, Martina Migliavacca, Pier Paolo Pompa Presenter: <i>Samia Kanwal</i> , Italian Institute of Technology

D2-MR09-PM-A / Efficient Ising Machine Implementation and its Applications

Monday, 6 July, 2026, 14:00-15:20 | VIP203 / 恒学厅

Session Chair: Siting Liu, ShanghaiTech University

Session Chair: Honglan Jiang, Shanghai Jiao Tong University

Time	Type	ID	Submission Details
14:00-14:20	INVITED	245	Title: Ising-Inspired Multi-State Annealer with Efficient Parallel Probabilistic Computing Author List: Zhan Chen, Wenshuo Yue, Bonan Yan Presenter: <i>Bonan Yan</i> , Peking University
14:20-14:40	INVITED	248	Title: A Versatile CMOS Ising Machine Based on Simulated Bifurcation Author List: Lehan Liu, Siting Liu Presenter: <i>Lehan Liu</i> , ShanghaiTech University
14:40-15:00	INVITED	251	Title: Optimization of Time-multiplexed Constant Multiplication via Ising Model Author List: Wenhui Zhang, Hui Wang, Jie Han, Honglan Jiang Presenter: <i>Wenhui Zhang</i> , Shanghai Jiao Tong University

PARALLEL SESSIONS

15:00-15:20	INVITED	273	Title: A Scalable Compute-in-Memory Ising Machine for Combinatorial Optimization Problems Author List: Xianmin Huang, Yu Qian, Xunzhao Yin Presenter: <i>Xianmin Huang</i> , Zhejiang University
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D2-MR09-PM-B / Bio-Interfaces, Bio-Inspired Surfaces & Modeling and Simulation

Monday, 6 July, 2026, 15:50-17:55 | VIP203 / 恒学厅

Session Chair: Benhui Hu, Nanjing Medical University

Session Chair: Yiyu Ou, Technical University of Denmark

Session Chair: Elena P. Ivanova, Royal Melbourne Institute of Technology University

Time	Type	ID	Submission Details
15:50-16:10	INVITED	321	Title: Robust Wireless Platforms for High-Fidelity Deep-Tissue Diagnostics and Therapeutics Author List: Benhui Hu Presenter: <i>Benhui Hu</i> , Nanjing Medical University
16:10-16:30	INVITED	372	Title: Miniaturized Electrochemtronic Biomedical System for Electrotherapy and Drug Delivery Author List: Yamin Zhang Presenter: <i>Yamin Zhang</i> , National University of Singapore
16:30-16:50	INVITED	131	Title: Development and Application of NanoSpike® Inspired by Cicada Wing Surface Author List: Takeshi Ito Presenter: <i>Takeshi Ito</i> , Kansai University
16:50-17:10	INVITED	153	Title: Nature-Inspired Surface Nanotechnology for Medical and Space Applications Author List: Yiyu Ou Presenter: <i>Yiyu Ou</i> , Technical University of Denmark
17:10-17:25	ORAL	452	Title: MoSe ₂ Nanocoatings on Urinary Catheters for Antibacterial Applications Author List: Jacobo Hernandez-Montelongo, Paola Díaz-Navarrete, Ruth Pulido, Francisco Javier Fernández-Alonso, Nelson Naveas, Miguel Manso, Purbasha Ray, Praveen Kumar, Prasana K. Sahoo Presenter: <i>Jesus Jacobo Hernandez Montelongo</i> , Catholic University of Temuco
17:25-17:40	ORAL	51	Title: Photoacoustic Chemical Imaging of the Tumor Microenvironment for Prediction of Therapeutic Efficacy in Breast Cancer Author List: Janggun Jo, Jeff Folz, Ahmad Eido, Maria Gonzalez, Roberta Caruso, Celina Kleer, Xueding Wang Presenter: <i>Xueding Wang</i> , University of Michigan

PARALLEL SESSIONS

17:40-17:55	ORAL	52	Title: Reactive Species Oxygen-Activatable CGNP-IR775c Nanoprobes Enable Longitudinal Viability Mapping of Transplanted Stem Cells via Multiwavelength Photoacoustic Microscopy and Optical Coherence Tomography Author List: Sumin Park, Van Phuc Nguyen, Wei Qian, Jeff Folz, Dayanthi Perera, Abigail Fahim, Yannis Paulus, Xueding Wang Presenter: <i>Xueding Wang</i>, University of Michigan
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PARALLEL SESSIONS

D3-MR02-AM / AI for Nanomaterials Design and Fabrication - IV

Tuesday, 7 July, 2026, 10:50-11:50 | Zhongda Lecture Hall / 中大报告厅

Session Chair: Wei Li, Suzhou National Laboratory

Time	Type	ID	Submission Details
10:50-11:10	INVITED	324	Title: Mechanism-Driven Computational Design of Novel Optoelectronic Materials Author List: Yuanhui Sun Presenter: <i>Yuanhui Sun</i> , Suzhou National Laboratory
11:10-11:30	INVITED	311	Title: Scalable Discovery of Two-Dimensional Sliding Ferroelectrics via High-Throughput Calculation and Machine Learning Author List: Wang Xian Presenter: <i>Xian Wang</i> , Suzhou National Laboratory
11:30-11:50	INVITED	314	Title: AI-Driven Discovery of New Materials for Experimental Synthesis Author List: Zhenbin Wang Presenter: <i>Zhenbin Wang</i> , City University of Hong Kong

D3-MR02-PM-A / AI for Nanomaterials Design and Fabrication - V

Tuesday, 7 July, 2026, 14:00-15:20 | Zhongda Lecture Hall / 中大报告厅

Session Chair: Zhenbin Wang, City University of Hong Kong

Time	Type	ID	Submission Details
14:00-14:20	INVITED	376	Title: Self-Driving Laboratory for Electronic Polymer Discovery Author List: Jie Xu Presenter: <i>Jie Xu</i> , University of Chicago
14:20-14:40	INVITED	429	Title: Agentic Robotic Boxes for Perovskite Solar Cell Fabrication with Recipe Language Model Author List: Chen Zijian, Wang Zixuan, Wu Chuang, Chen Feibei, Haitao Zhao Presenter: <i>Haitao Zhao</i> , The Hong Kong Polytechnic University
14:40-15:00	INVITED	315	Title: Artificial Intelligence Assisted Materials Design and Discovery Towards High-Energy Lithium Batteries Author List: Xiaokun Zhang Presenter: <i>Xiaokun Zhang</i> , Suzhou National Laboratory
15:00-15:20	INVITED	327	Title: Multiscale Modeling of Neurocomputing Memristors Author List: Shuang Chen Presenter: <i>Shuang Chen</i> , Nanjing University

PARALLEL SESSIONS

D3-MR02-PM-B / AI for Nanomaterials Design and Fabrication - VI

Tuesday, 7 July, 2026, 15:50-17:30 | Zhongda Lecture Hall / 中大报告厅

Session Chair: Shuang Chen, Nanjing University

Time	Type	ID	Submission Details
15:50-16:10	INVITED	158	Title: Machine-Learning Molecular Dynamics Simulations of the Interfaces in Solid-State Batteries Author List: Boyuan Xu, Haohong Song, Qisheng Wu Presenter: <i>Qisheng Wu</i> , Suzhou National Laboratory
16:10-16:30	INVITED	350	Title: AI-Assisted Study on Solid-State Electrolytes for Lithium Batteries Author List: Chunpeng Yang Presenter: <i>Chunpeng Yang</i> , Tianjin University
16:30-16:50	INVITED	411	Title: AI-Driven Approaches in Polymer Materials Design Author List: Wei Li Presenter: <i>Wei Li</i> , Suzhou National Laboratory
16:50-17:10	INVITED	330	Title: Energy and Forces Are All You Need Author List: Bingqing Cheng Presenter: <i>Bingqing Cheng</i> , UC Berkeley

PARALLEL SESSIONS

D3-MR03-AM / High-Frequency Acoustics at the Nanoscale - I

Tuesday, 7 July, 2026, 10:50-11:50 | VIP201 / 洁行厅

Session Chair: Tao Wu, ShanghaiTech University

Session Chair: Qicheng Zhang, Westlake University

Time	Type	ID	Submission Details
10:50-11:10	INVITED	148	Title: Piezoelectric Thin Film RF Modulators Author List: Tao Wu Presenter: <i>Tao Wu</i> , ShanghaiTech University
11:10-11:30	INVITED	205	Title: Impedance-matched High-Overtone Thickness-Shear Bulk Acoustic Resonators with Scalable Mode Volume Author List: Zidong Zhang Presenter: <i>Zidong Zhang</i> , Nanjing University of Aeronautics and Astronautics
11:30-11:50	INVITED	352	Title: Gigahertz Integrated Phononic Circuits based on Dirac Dispersion Author List: Qicheng Zhang Presenter: <i>Qicheng Zhang</i> , Westlake University

D3-MR03-PM-A / High-Frequency Acoustics at the Nanoscale - II

Tuesday, 7 July, 2026, 14:00-15:20 | VIP201 / 洁行厅

Session Chair: Tao Wu, ShanghaiTech University

Session Chair: Qicheng Zhang, Westlake University

Time	Type	ID	Submission Details
14:00-14:20	INVITED	290	Title: On-Chip Elastic Wave Manipulations Based on Synthetic Dimension Author List: Zhenxing Cui, Chaohua Wu, Qiang Wei, Mou Yan, Gang Chen Presenter: <i>Zhenxing Cui</i> , Shanxi University
14:20-14:40	INVITED	295	Title: High-Performance cmWave and mmWave Acoustic Resonators for 6G and Wi-Fi 8 Author List: Jiale Xie, Zhongbin Dai, Chengjie Zuo Presenter: <i>Chengjie Zuo</i> , University of Science and Technology of China
14:40-15:00	INVITED	316	Title: Zhengfu Architecture for Hybrid Phononic-Photonic-Superconducting Integrated Circuits Author List: Zou Changling Presenter: <i>Changling Zou</i> , University of Science and Technology of China
15:00-15:20	INVITED	283	Title: Good Vibrations: Light, Sound and Spins Author List: Krishna Coimbatore Balram Presenter: <i>Krishna Coimbatore Balram</i> , University of Bristol

PARALLEL SESSIONS

D3-MR03-PM-B / Emerging Technologies for Unconventional Computing

Tuesday, 7 July, 2026, 15:50-17:50 | VIP201 / 洁行厅

Session Chair: Giovanni Finocchio, University of Messina

Session Chair: Guilherme Penello Temporao, Pontifical Catholic University of Rio de Janeiro

Time	Type	ID	Submission Details
15:50-16:10	INVITED	151	Title: Adaptive Ising Machines With Spintronics Author List: Giovanni Finocchio, Eleonora Raimondo Presenter: <i>Giovanni Finocchio</i> , University of Messina
16:10-16:30	INVITED	187	Title: Fraud detection using Quantum-Assisted Machine Learning Author List: João Neto, Pedro Ripper, Alexandre Wanick, Gustavo Amaral, Guilherme Temporão Presenter: <i>Guilherme Penello Temporao</i> , Pontifical Catholic University of Rio de Janeiro
16:30-16:50	INVITED	255	Title: Proton-conducting Perovskite Nickelates for In-sensor Neuromorphic Computing Author List: Yifan Yuan, Lixia Han, Hanwen Tan, Haotian Li, Weiwei Li, Weiqiang Liu Presenter: <i>Yifan Yuan</i> , Nanjing University of Aeronautics and Astronautics
16:50-17:10	INVITED	294	Title: Tailoring the Dielectric Response of Plasma Synthesized AgNPs-Networks for Capacitive Memory Window Modulation Author List: C. Villeneuve-Faure, S. Nowa Tatchum, L. Boudou, J. Grisolia, G. Teyssedre, K. Makasheva Presenter: <i>Kremena Makasheva</i> , LAPLACE CNRS University of Toulouse
17:10-17:30	INVITED	358	Title: Spintronic and Oscillator-Based Ising Machines for Large-Scale Combinatorial Optimization Author List: Vito Puliafito Presenter: <i>Vito Puliafito</i> , Politecnico di Bari
17:30-17:50	INVITED	416	Title: Ultra-Fast Ising Machine for Combinatorial Optimization using Sub-nanosecond CMOS-integrated Magnetoresistive Random Access Memory Author List: Sai Li, Yihao Zhang, Albert Lee, Zheng Zhu, Lang Zeng, Peng Wang, Lei Gao, Di Wu, Weisheng Zhao Presenter: <i>Sai Li</i> , Beihang University

PARALLEL SESSIONS

D3-MR04-AM / Low-dimensional Nanomaterials and Nanoelectronics

Tuesday, 7 July, 2026, 10:50-12:05 | VIP210 / 以行厅

Session Chair: Chao Zhu, Southeast University

Session Chair: Ting Wen, Huzhou College

Time	Type	ID	Submission Details
10:50-11:10	INVITED	270	Title: Crystalline Antimony Contacts for 1-nm Node MoS ₂ Transistors Author List: Weisheng Li Presenter: <i>Weisheng Li</i> , Nanjing University
11:10-11:30	INVITED	349	Title: New Discoveries of Heterostructure Ferroelectricity and Elemental Ferroelectrics Author List: Yucheng Jiang Presenter: <i>Yucheng Jiang</i> , Suzhou University of Science and Technology
11:30-11:50	INVITED	364	Title: Phase Evolution and Properties in Two-Dimensional van der Waals Ferroelectrics CuInP2S6 with Different Cu/In Ratios Author List: Yunjian Cao, Zenghui Liu, Gang Niu Presenter: <i>Yunjian Cao</i> , Xi'an Jiaotong University
11:50-12:05	ORAL	253	Title: Homoepitaxial Growth of Large-Area Rhombohedral-Stacked MoS ₂ Author List: Lei Liu, Taotao Li, Xiaoshu Gong, Hengdi Wen, Xinran Wang Presenter: <i>Lei Liu</i> , Suzhou National Laboratory

D3-MR04-PM-A / Machine Learning-Enhanced Plasma Nanotechnologies

Tuesday, 7 July, 2026, 14:00-15:20 | VIP210 / 以行厅

Session Chair: Feng Liang, Kunming University of Science and Technology

Session Chair: Hiroki Kondo, Kyushu University

Time	Type	ID	Submission Details
14:00-14:20	INVITED	188	Title: Diversity Mapping for TEOS Capacitively Coupled Plasmas Author List: Masaharu Shiratani, Kunihiro Kamataki Presenter: <i>Masaharu Shiratani</i> , Kyushu University
14:20-14:40	INVITED	386	Title: Mechanistic Insights Into CO ₂ Capture and CO Formation Over Ionic Liquid-Assisted Non-Thermal Plasma Author List: Pankaj Attri, Kazunori Koga, Takamasa Okumura, Kunihiro Kamataki, Masaharu Shiratani Presenter: <i>Pankaj Attri</i> , Kyushu University

PARALLEL SESSIONS

14:40-15:00	INVITED	387	Title: Machine Learning Enhanced Plasma Nanotechnologies for Next-Generation Materials Author List: Jaka Olenik, Mike Diessner, Richard Whalley, James Walsh, Uroš Cvelbar Presenter: <i>Jaka Olenik</i>, Jozef Stefan Institute
15:00-15:20	INVITED	390	Title: Robust Prediction of Plasma Deposition Rate by Coupling Condition-Derived Anchors with High-Dimensional OES Features under Small-Sample Constraints Author List: T. Liu, K. Kamataki, M. Shiratani Presenter: <i>Tong Liu</i>, Kyushu University

D3-MR04-PM-B / Machine Learning–Enhanced and Emerging Plasma Nanotechnologies

Tuesday, 7 July, 2026, 15:50-17:55 | VIP210 / 以行厅

Session Chair: Masaharu Shiratani, Kyushu University

Session Chair: Hiroki Kondo, Kyushu University

Time	Type	ID	Submission Details
15:50-16:10	INVITED	391	Title: Physics-Informed Feature Engineering for Machine Learning in PECVD Thin-Film Growth Author List: Kunihiro Kamataki, Sukma Fitriani, Masaharu Shiratani Presenter: <i>Kunihiro Kamataki</i>, Kyushu University
16:10-16:30	INVITED	394	Title: DBD Plasma Multi-scale Modification of Interfaces for NVP Author List: Zhipeng Xie, Feng Liang Presenter: <i>Feng Liang</i>, Kunming University of Science and Technology
16:30-16:50	INVITED	397	Title: Mechanistic Insights into Thin Film Functionalization in PECVD via Interpretable Machine Learning Author List: Hiroki Kondo Presenter: <i>Hiroki Kondo</i>, Kyushu University
16:50-17:10	INVITED	418	Title: Reconsidering the Value of the Digital Twin Concept for Pathfinding in Semiconductor Device Fabrication Author List: Peter Ventzek, Qiang Wang, Gregory Hartmann, Tsung-Hsuan Yang Presenter: <i>Peter Ventzek</i>, Tokyo Electron America, Inc.
17:10-17:25	ORAL	73	Title: Low-Temperature SiO₂ Deposition at 100 °C by ICP-PECVD: Effect of SiH₄ /O₂ Flow Ratio and Insights into Film Formation Author List: Yosuke Wakabayashi, Kunihiro Kamataki, Masayasu Hatashita, Takashi Yamamoto, Toshihiro Hayami, Masaharu Shiratani Presenter: <i>Yosuke Wakabayashi</i>, SPP Technologies Co., Ltd.

PARALLEL SESSIONS

17:25-17:40	ORAL	334	Title: Temperature Dependence of Anomalous Hall Effect in Strained Thulium Iron Garnet/ Platinum Heterostructure Grown by Magnetron Sputtering Author List: Naoto Yamashita, Ivo P.C. Cools, Lei Yan, Jinyu Xu, Divya Prakash Dubey, Saroj Dash Presenter: <i>Naoto Yamashita</i>, Kyushu University
17:40-17:55	ORAL	286	Title: Effects of the On- and Off-Times of a Rectangular Applied Voltage Waveform on the Propagation Characteristics of Surface-Launched Plasma Bullets in Argon Gas Author List: Tatsuru Shirafuji Presenter: <i>Tatsuru Shirafuji</i>, Osaka Metropolitan University

PARALLEL SESSIONS

D3-MR05-AM / Advanced Flexible Electronics with Multifunctional Applications - I

Tuesday, 7 July, 2026, 10:50-12:05 | VIP211 / 躬行厅

Session Chair: Ximeng Liu, Northwestern Polytechnical University

Session Chair: Dan Wen, Northwestern Polytechnical University

Time	Type	ID	Submission Details
10:50-11:10	INVITED	276	Title: Flexible Intelligent Sensing Materials, Devices and Systems Author List: Qiang Zhao Presenter: <i>Qiang Zhao</i> , Nanjing University of Posts and Telecommunications; Nanjing University of Information Science and Technology
11:10-11:30	INVITED	468	Title: Optical Crystals of 2D Materials Author List: Kaihui Liu Presenter: <i>Kaihui Liu</i> , Peking University
11:30-11:50	INVITED	362	Title: Integratable Micro-Power Sources for Smart Electronics Author List: Xinghui Wang Presenter: <i>Xinghui Wang</i> , Fuzhou University
11:50-12:05	ORAL	462	Title: Modulus Engineered Substrate with Vertical Soft Interconnects for Ultra-Stable Stretchable Multilayer Electronic Systems Author List: Wenbo Zhao, Cao Guan Presenter: <i>Wenbo Zhao</i> , Northwestern Polytechnical University

D3-MR05-PM-A / Advanced Flexible Electronics with Multifunctional Applications - II

Tuesday, 7 July, 2026, 14:00-15:20 | VIP211 / 躬行厅

Session Chair: Xinghui Wang, Fuzhou University

Session Chair: Yong Gao, Dalian University of Technology

Time	Type	ID	Submission Details
14:00-14:20	INVITED	345	Title: Flexible 2D Optoelectronic Materials via Post-Transition Liquid Metals Author List: Kourosh Kalantar-Zadeh Presenter: <i>Kourosh Kalantar-Zadeh</i> , The University of Sydney
14:20-14:40	INVITED	469	Title: Flexible Electronic Materials: Structural Design and Biological Applications Author List: Xiaochen Dong Presenter: <i>Xiaochen Dong</i> , Jiangsu Normal University
14:40-15:00	INVITED	269	Title: Design and Evaluation of RF Energy Harvesting and LIG-Based Environmental Sensor Author List: Ke Xin Wong, Bing Wei Chua, Mei Kum Khaw, Pei Song Chee Presenter: <i>Pei Song Chee</i> , Universiti Tunku Abdul Rahman

PARALLEL SESSIONS

15:00-15:20	INVITED	460	Title: Multiscale Structure Design of Nanomaterials Through Metal-Organic Framework Derivation for Future Devices Author List: Ximeng Liu Presenter: <i>Ximeng Liu</i> , Northwestern Polytechnical University
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D3-MR05-PM-B / Advanced Flexible Electronics with Multifunctional Applications - III

Tuesday, 7 July, 2026, 15:50-18:05 | VIP211 / 躬行厅

Session Chair: Jie Pu, Northwestern Polytechnical University

Session Chair: Jiayu Yang, Xi'an Shiyou University

Time	Type	ID	Submission Details
15:50-16:10	INVITED	467	Title: Metal Hydro-/AeroGel-Based Wearable Biosensors: From Design to Application Author List: Dan Wen Presenter: <i>Dan Wen</i> , Northwestern Polytechnical University
16:10-16:30	INVITED	262	Title: Redesigning Soft Conductive Nanocomposites for Stretchable Electronics Author List: Desheng Kong Presenter: <i>Desheng Kong</i> , Nanjing University
16:30-16:50	INVITED	461	Title: Design and Additive Manufacturing of Structural Batteries Author List: Yihe Yue, Zhiyang Lyu Presenter: <i>Yihe Yue</i> , Southeast University
16:50-17:10	INVITED	212	Title: Cross-scale Nanoarray Engineering for Stable Zinc Metal Anodes Author List: Yong Gao, Cao Guan Presenter: <i>Yong Gao</i> , Dalian University of Technology
17:10-17:30	INVITED	466	Title: Liquid Metal-Based Stable and Stretchable Zn-Ion Battery for Electronic Textiles Author List: Jie Pu Presenter: <i>Jie Pu</i> , Northwestern Polytechnical University
17:30-17:50	INVITED	470	Title: Hydrogel-Enabled Zn 2+ Transport Regulation in a 3D Zinc Powder Anode for Improved Cycling Performance Author List: Jiayu Yang Presenter: <i>Jiayu Yang</i> , Xi'an Shiyou University
17:50-18:05	ORAL	463	Title: Utilizing Hydrogen Evolution Reaction: Bio-Inspired pH-Sensitive Electrolyte for Ultra-Stable Zinc-Ion Batteries at High Temperatures Author List: Fan Bu, Cao Guan Presenter: <i>Fan Bu</i> , Northwestern Polytechnical University

PARALLEL SESSIONS

D3-MR06-AM / Merging Life Science with Physical Science for New Functional Devices - II

Tuesday, 7 July, 2026, 10:50-11:50 | VIP208 / 博学厅

Session Chair: Yitao Long, Nanjing University

Session Chair: Zhen Zhang, Uppsala University

Time	Type	ID	Submission Details
10:50-11:10	INVITED	512	Title: Electrophoretic Transport of Single-Stranded DNA through a Two-Dimensional Nanopore Patterned on an In-Plane Heterostructure Author List: Binquan Luan Presenter: <i>Binquan Luan</i> , Suzhou Institute of Biomedical Engineering and Technology, Chinese Academy of Sciences
11:10-11:30	INVITED	323	Title: High-Speed AFM Imaging to Probe the Structural Dynamics of Chromosome-Organizing Proteins Author List: Je-Kyung Ryu Presenter: <i>Je-Kyung Ryu</i> , Seoul National University
11:30-11:50	INVITED	340	Title: Merging Physical Sensing with Computational Intelligence: A New Paradigm for Multifunctional Nanopore-Based DNA Digital Information Storage Systems Author List: Yi Li Presenter: <i>Yi Li</i> , Southern University of Science and Technology

D3-MR06-PM-A / Merging Life Science with Physical Science for New Functional Devices - III

Tuesday, 7 July, 2026, 14:00-15:00 | VIP208 / 博学厅

Session Chair: Jean-Pierre Leburton, University of Illinois Urbana-Champaign

Session Chair: Qing Chen, Hong Kong University of Science and Technology

Time	Type	ID	Submission Details
14:00-14:20	INVITED	445	Title: Nanopore Based Analysis of Polymerase Conformational States through an Integrated Signal Pipeline Author List: Guohao Xi, Jing Tu Presenter: <i>Jing Tu</i> , Southeast University
14:20-14:40	INVITED	471	Title: Nanoparticles Hijack Calvarial Immune Cells for CNS Drug Delivery and Stroke Therapy Author List: Xize Gao Presenter: <i>Xize Gao</i> , Tsinghua University

PARALLEL SESSIONS

14:40-15:00	INVITED	141	Title: Stereo-Selective Nanopore for Single-Molecule Reaction Author List: Yi-Lun Ying Presenter: <i>Yi-Lun Ying</i> , Nanjing University
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D3-MR06-PM-B / Two-Dimensional (2D) Heterostructures for Next-Generation Optoelectronic and Neuromorphic Systems

Tuesday, 7 July, 2026, 15:50-17:30 | VIP208 / 博学厅

Session Chair: Antonio Di Bartolomeo, Università degli Studi di Salerno

Session Chair: Gang Niu, Xi'an Jiaotong University

Time	Type	ID	Submission Details
15:50-16:10	INVITED	260	Title: MoS2 Based Photo-Transistors With Schottky Contacts and Ferroelectric HZO Gate Dielectrics Author List: Gang Niu Presenter: <i>Gang Niu</i> , Xi'an Jiaotong University
16:10-16:30	INVITED	291	Title: 2D Material Integrated Silicon Systems for Next-Generation Optoelectronics and Imaging Author List: Srikrishna Bodepudi, Xiaochen Wang, Jian Chai, Xuan Ye, Muhammad Malik, Muhammad Abid Anwar, Wenzhang Fang, Yang Xu Presenter: <i>Srikrishna Chanakya Bodepudi</i> , Zhejiang University
16:30-16:50	INVITED	381	Title: Computational Design of 2D Semiconductor Device for Next-Generation Logics and Memory Devices Author List: Yee Sin Ang Presenter: <i>Yee Sin Ang</i> , Singapore University of Technology and Design
16:50-17:10	INVITED	417	Title: Multifunctional Optoelectronics and Memory Effects Enabled by Trap States in Tin-Based 2D Semiconductors Author List: Antonio Di Bartolomeo Presenter: <i>Antonio Di Bartolomeo</i> , Salerno University
17:10-17:30	INVITED	71	Title: Surface Oxides in Two-Dimensional Materials for Device Processing Author List: Ryo Nouchi Presenter: <i>Ryo Nouchi</i> , Osaka Metropolitan University

PARALLEL SESSIONS

D3-MR07-AM / Nanodevice Physics

Tuesday, 7 July, 2026, 10:50-11:50 | VIP206 / 向学厅

Session Chair: Shenghai Pei, University of Electronic Science and Technology of China

Time	Type	ID	Submission Details
10:50-11:10	INVITED	506	Title: 2D Semiconductors With Higher Mobility and Scalability for Low Temperature Quantum Electronics Author List: Zheng Han Presenter: <i>Zheng Han</i> , Shanxi University
11:10-11:30	INVITED	502	Title: Intelligent Iodide-Based Two-Dimensional Semiconductors for Next-Generation Optoelectronics Author List: Lin Wang Presenter: <i>Lin Wang</i> , Nanjing Tech University
11:30-11:50	INVITED	504	Title: Heterogeneous Integration of Low-Dimensional Materials Author List: Hongwei Liu Presenter: <i>Hongwei Liu</i> , Nanjing Normal University

D3-MR07-PM-A / Intelligent Adaptive Biointerfaces

Tuesday, 7 July, 2026, 14:00-15:00 | VIP206 / 向学厅

Session Chair: Yiyuan Yang, National University of Singapore

Time	Type	ID	Submission Details
14:00-14:20	INVITED	133	Title: Mechanics-Guided Bioelectronic Systems: From Structural Design to Clinical Translation Author List: Kyung-In Jang Presenter: <i>Kyung-In Jang</i> , Daegu Gyeongbuk Institute of Science & Technology
14:20-14:40	INVITED	268	Title: From Rigid to Soft: Adaptive Bioelectronics Using Phase-Change Metal Ink Author List: Jae-Woong Jeong Presenter: <i>Jae-Woong Jeong</i> , Korea Advanced Institute of Science and Technology
14:40-15:00	INVITED	367	Title: Deep-tissue Chemical Sensing with Ultrasound Author List: Jiaqi Liu Presenter: <i>Jiaqi Liu</i> , City University of Hong Kong

PARALLEL SESSIONS

D3-MR07-PM-B / Nanodevice Physics & Nano-Materials

Tuesday, 7 July, 2026, 15:50-18:00 | VIP206 / 向学厅

Session Chair: Wenhui Wang, Southeast University

Session Chair: Shenghai Pei, University of Electronic Science and Technology of China

Time	Type	ID	Submission Details
15:50-16:10	INVITED	505	Title: Unlocking the Deeper Impact of Interfaces Author List: Jun Yin Presenter: <i>Jun Yin</i> , Nanjing University of Aeronautics and Astronautics
16:10-16:30	INVITED	501	Title: Tuning and Quantifying Electron-Phonon Coupling in 2D Cr-Based Systems Author List: Shenghai Pei Presenter: <i>Shenghai Pei</i> , University of Electronic Science and Technology of China
16:30-16:50	INVITED	507	Title: Novel Integrated Sensing, Memory, and Computing Devices and Chips Author List: Shijun Liang Presenter: <i>Shijun Liang</i> , Nanjing University
16:50-17:10	INVITED	508	Title: 2D Mismatchtronics Author List: Yanpeng Liu Presenter: <i>Yanpeng Liu</i> , Nanjing University of Aeronautics and Astronautics
17:10-17:30	INVITED	509	Title: Non-pixelated Intelligent Sensing with Graphene-based Position-Sensitive Detectors Author List: Wenhui Wang, Zhenhua Ni, Kaiyang Liu, Peiyu Zeng Presenter: <i>Wenhui Wang</i> , Southeast University
17:30-17:45	ORAL	124	Title: Optically Reconfigurable Rectification and Anisotropic Photocurrent Transport in Thickness Engineered Two-Dimensional Heterojunctions Author List: Zhiyuan Wang, Zhixin Chen, Zichao Ma Presenter: <i>Zhiyuan Wang</i> , South China University of Technology
17:45-18:00	ORAL	169	Title: Optimization of Plasmonic Core@Shell Nanoparticles for LSPR Biosensing via Mie Theory and Machine Learning Author List: Fahime Seyedheydari, Simo Säkkä Presenter: <i>Fahime Seyedheydari</i> , Aalto University

PARALLEL SESSIONS

D3-MR08-AM / Nano-Optoelectronics and Neuromorphic Systems - I

Tuesday, 7 July, 2026, 10:50-11:50 | VIP205 / 思学厅

Session Chair: Shengman Li, National University of Singapore

Session Chair: Lan Fu, The Australian National University

Time	Type	ID	Submission Details
10:50-11:10	INVITED	521	Title: Advancing High-Performance FEOL/ BEOL Transistors through Process and Materials Innovation Author List: Shengman Li Presenter: <i>Shengman Li</i> , National University of Singapore
11:10-11:30	INVITED	519	Title: Ambipolar Ohmic Contact to Silicon for High Performance Brain-Inspired Image Sensors Author List: Haoran Sun Presenter: <i>Haoran Sun</i> , Fudan University
11:30-11:50	INVITED	514	Title: Edge-Dominated Epitaxy of Topological Insulator Bi ₂ Se ₃ With Ultra-Broadband Response Author List: Tiange Zhao Presenter: <i>Tiange Zhao</i> , Shanghai Institute of Technical Physics, Chinese Academy of Sciences

D3-MR08-PM-A / Nano-Optoelectronics and Neuromorphic Systems - II

Tuesday, 7 July, 2026, 14:00-15:00 | VIP205 / 思学厅

Session Chair: Qing Li, Hangzhou Institute for Advanced Study

Time	Type	ID	Submission Details
14:00-14:20	INVITED	517	Title: Bio-Intelligent Optoelectronic Neural Interfaces based on Low-Dimensional Tellurium for Visual Restoration and Infrared Perception Enhancement Author List: Yiye Yu Presenter: <i>Yiye Yu</i> , Shanghai Institute of Technical Physics, Chinese Academy of Sciences
14:20-14:40	INVITED	520	Title: Beyond Detection: Multidimensional and Logic-Integrated Infrared Optoelectronics Based on 2D van der Waals Heterostructures Author List: Qing Li Presenter: <i>Qing Li</i> , Hangzhou Institute for Advanced Study
14:40-15:00	INVITED	518	Title: Ferroelectrics Integrated With Photoconductive Effect Enabling Dual-Reservoir Spatiotemporal Perception Author List: Xiaoyong Jiang, Guangdi Feng, Jinshui Miao Presenter: <i>Xiaoyong Jiang</i> , Shanghai Institute of Technical Physics

PARALLEL SESSIONS

D3-MR08-PM-B / Nano-Optoelectronics and Neuromorphic Systems - III

Tuesday, 7 July, 2026, 15:50-17:30 | VIP205 / 思学厅

Session Chair: Li Gao, Nanjing University of Posts and Telecommunications

Session Chair: Xiwen Liu, Hong Kong University of Science and Technology (Guangzhou)

Time	Type	ID	Submission Details
15:50-16:10	INVITED	524	Title: 2D van der Waals Heterostructures for Photodetector Applications Author List: Li Gao Presenter: <i>Li Gao</i> , Nanjing University of Posts and Telecommunications
16:10-16:30	INVITED	523	Title: Ferroelectric Diodes for Power-Efficient and Reliable Computing-in-Memory Author List: Xiwen Liu, Renhao Xue, Wenjuan Zhou, Quanyi Tu Presenter: <i>Xiwen Liu</i> , Hong Kong University of Science and Technology (Guangzhou)
16:30-16:50	INVITED	312	Title: Hafia Ferroelectrics Based Integrated On-Chip MZI for Optical Phase Modulation and Optical Neuromorphic Computing Applications Author List: Zifan Hou, Jinyan Zhao, Gang Niu Presenter: <i>Zifan Hou</i> , Xi'an Jiaotong University
16:50-17:10	INVITED	516	Title: Avalanche Multiplication Effect in Stepwise van der Waals Homojunctions and Its Optoelectronic Device Applications Author List: Hailu Wang, Yueyue Fang, Chao Mao Presenter: <i>Hailu Wang</i> , Shanghai Institute of Technical Physics, Chinese Academy of Sciences
17:10-17:30	INVITED	288	Title: Multidimensional Intelligent Infrared Photodetectors Based on Low Dimensional Materials Author List: Hangyu Xu Presenter: <i>Hangyu Xu</i> , Shanghai Institute of Technical Physics, Chinese Academy of Sciences

PARALLEL SESSIONS

D3-MR09-AM / Emerging Spintronic Materials and Devices

Tuesday, 7 July, 2026, 10:50-11:50 | VIP203 / 恒学厅

Session Chair: Yue Zhang, Beihang University

Session Chair: Zhenyi Zheng, Beihang University

Time	Type	ID	Submission Details
10:50-11:10	INVITED	76	Title: Effective Electrical Manipulation of Chiral Antiferromagnetic Order Author List: Zhenyi Zheng Presenter: <i>Zhenyi Zheng</i> , Beihang University
11:10-11:30	INVITED	83	Title: Geometry-Driven Polar Antiferromagnetic Metallicity in a Double-Layered Perovskite Cobaltate Author List: Xinyu Shu Presenter: <i>Xinyu Shu</i> , Hangzhou Dianzi University
11:30-11:50	INVITED	432	Title: Efficient Spin Injection via van der Waals Tunnel Contacts Author List: Deyi Fu Presenter: <i>Deyi Fu</i> , Xiamen University

D3-MR09-PM-A / Nanofabrication & Nano-sensors

Tuesday, 7 July, 2026, 14:00-15:15 | VIP203 / 恒学厅

Session Chair: Tingting Zhang, Nanjing University of Aeronautics and Astronautics

Session Chair: Yichen Liu, Southeast University

Time	Type	ID	Submission Details
14:00-14:20	INVITED	425	Title: Photo-adaptive Iontronic Electronics for Efficient Machine Vision Author List: Haifeng Ling Presenter: <i>Haifeng Ling</i> , Nanjing University of Posts and Telecommunications
14:20-14:40	INVITED	503	Title: Calibrating van der Waals Force via Layer Engineering Author List: Ting Wen Presenter: <i>Ting Wen</i> , Huzhou College
14:40-15:00	INVITED	244	Title: WSe2 Homojunction enabled Negative Differential Resistance Effect for Sensor-Transceiver Multifunctional Devices Author List: Chengdong Zhao, Bingbing Chen, Yiguo Liu, Zhehan Wang, Xuyan Zhang, Nuo Cheng, Linbo Sun, Li Tao Presenter: <i>Chengdong Zhao</i> , Southeast University
15:00-15:15	ORAL	320	Title: Real-Time Cold Chain Temperature Monitoring Using a Flexible Wireless Sensor Node with Laser-Induced Graphene Author List: Byunghoon Ryu Presenter: <i>Byunghoon Ryu</i> , Inha University

PARALLEL SESSIONS

D3-MR09-PM-B / Modeling and Simulation - I

Tuesday, 7 July, 2026, 15:50-17:20 | VIP203 / 恒学厅

Session Chair: Hoon Ryu, Kumoh National Institute of Technology

Session Chair: Gabriel Dima, National University of Science and Technology POLITEHNICA Bucharest

Session Chair: Yadong Wei, Harbin Institute of Technology

Time	Type	ID	Submission Details
15:50-16:05	ORAL	123	Title: A Passive Acoustic Waveguide for Nonreciprocal Transmission Based on Wave-Vector Modulation Author List: Xiaoyin Wan, Xuankai Xu, Lihui Jin, Tao Wu Presenter: Tao Wu, ShanghaiTech University
16:05-16:20	ORAL	164	Title: Thick-Resist Vector Lithography Simulation based on Effective Spectral Contribution Author List: Shiyao Tian, Kaiqi Guo, Xianjie Li, Jikui He, Yanqing Xiao, Zaifa Zhou Presenter: Shiyao Tian, Southeast University
16:20-16:35	ORAL	178	Title: Selective Thermal Tuning of Two Transmission Peaks in a Dual-SPUDT Acoustic Delay Line Author List: Zichen Wang, Xuankai Xu, Tao Wu Presenter: Tao Wu, ShanghaiTech University
16:35-16:50	ORAL	214	Title: Optical Modeling and Spectral Tuning of Plasmonic Si/Au Nanopillars for Filter-Free Narrowband Photodetection Author List: Chuan Qin, Qianqian Zhang, Zongwen Li, Feng Tian, Shaoxiong Wu, Xinyi Xu, Wenzhang Fang, Yang Xu, Presenter: Chuan Qin, Zhejiang University
16:50-17:05	ORAL	85	Title: LLM-Guided Co-Evolution of Nanorobot Morphology and Control for Tumor Targeting Author List: Weiqi Liu, Shaolong Shi Presenter: Weiqi Liu, Xinjiang University
17:05-17:20	ORAL	111	Title: Accuracy Evaluation of Deep Convolutional Neural Networks for N- and B-Doped Graphene Electronic Wavefunctions Prediction at Variable Doping Sites Author List: Marco A. Pérez-Flores, Rubén Guerrero-Rivera, Eduardo Gamero-Inda, Norma A. García-Vidaña, Francisco J. Godínez-García, Josué Ortiz-Medina Presenter: Josue Ortiz-Medina, Tecnologico Nacional de Mexico

PARALLEL SESSIONS

D4-MR02-AM / Intelligent Edge Sensing and Computing

Wednesday, 8 July, 2026, 10:50-11:50 | Zhongda Lecture Hall / 中大报告厅

Session Chair: Wang Kang, Beihang University

Session Chair: Junzhan Liu, Hangzhou International Innovation Institute of Beihang University

Time	Type	ID	Submission Details
10:50-11:10	INVITED	193	Title: Intelligent Visual Recognition System Based on Senputing-CNN Author List: Yinghao Zhang, Jiyang Wang, Liang Zhang, Hengrui Guo, Yan Liang, Wang Kang, Jinshui Miao, Fei Qiao Presenter: <i>Fei Qiao</i> , Tsinghua University
11:10-11:30	INVITED	361	Title: In-Sensor Computing Chip for Edge Intelligence Author List: Junzhan Liu, Liang Zhang, He Zhang, Wang Kang Presenter: <i>Junzhan Liu</i> , Hangzhou International Innovation Institute of Beihang University
11:30-11:50	INVITED	366	Title: End-to-End Analog Intelligent Computing Architectures for Ultra-Efficient Edge Vision Author List: Zhengke Yang, Longyang Lin Presenter: <i>Longyang Lin</i> , Southern University of Science and Technology

D4-MR02-PM-A / Intelligent Edge Sensing and Computing & Nanosensors and Nanoactuators

Wednesday, 8 July, 2026, 14:00-15:25 | Zhongda Lecture Hall / 中大报告厅

Session Chair: Wang Kang, Beihang University

Session Chair: Junzhan Liu, Hangzhou International Innovation Institute of Beihang University

Time	Type	ID	Submission Details
14:00-14:20	INVITED	408	Title: Smart Vision Chip Author List: Liyuan Liu Presenter: <i>Liyuan Liu</i> , Institute of Semiconductors, Chinese Academy of Sciences
14:20-14:40	INVITED	410	Title: Synchronous Dynamic-Static Event Encoding for In-Sensor Spiking Neural Network-Based Human Action Recognition Author List: Xiong Zhao, Yanan Liu Presenter: <i>Yanan Liu</i> , Shanghai University
14:40-14:55	ORAL	194	Title: Mechanistic Insights into Protein Translocation under Competing Electrophoretic and Electroosmotic Forces in Solid-State Nanopores Author List: Rui Liu, Tixi He, Yin Zhang Presenter: <i>Rui Liu</i> , Southeast University

PARALLEL SESSIONS

14:55-15:10	ORAL	259	Title: Asymmetric Dual-Gate Junctionless MOSFET Biosensor with Diagonal Nanocavities for Classification of Breast Cancer Cell Lines Author List: Divey Pradhan, Ronak Dudani, Kankan Deka, Basudha Dewan Presenter: <i>Divey Pradhan</i> , Manipal University Jaipur
15:10-15:25	Oral Presentation	419	Title: A Custom LSPRi Device Based on Hyperspectral Imaging Author List: Attila Bonyár, Rebeka Kovacs, Nóra Tarpataki, Dalila Kaouari, Tomáš Lednický, Lóránt Csőke, László Domján Presenter: <i>Attila Bonyár</i> , Budapest University of Technology and Economics

D4-MR02-PM-B / Modeling and Simulation - II

Wednesday, 8 July, 2026, 15:50-16:50 | Zhongda Lecture Hall / 中大报告厅

Session Chair: Josue Ortiz-Medina, Tecnologico Nacional de Mexico

Session Chair: Kaili Zhang, State Key Laboratory of Spintronics, Hangzhou International Innovation Institute, Beihang University, Hangzhou

Time	Type	ID	Submission Details
15:50-16:05	ORAL	234	Title: In Situ Photocurrent-Driven Feature Extraction in Memristive Oscillatory-based Reservoirs Author List: Ioannis Tompris, Ioannis K. Chatzipaschalis, Theodoros Panagiotis Chatzinikolaou, Georgios Kleitsiotis, Iosif-Angelos Fyrigos, Georgios Ch. Sirakoulis Presenter: <i>Georgios Ch. Sirakoulis</i> , Democritus University of Thrace
16:05-16:20	ORAL	300	Title: Unipolar to Bipolar Transition in Resistive Memories Based on Silicon Nitride Thin Films by Different CVD Techniques Author List: Alexandros E. Mavropoulis, Artin Ovsanian, Thanasis Kostopoulos, Georgios Konstantinidis, Pascal Normand, Georgios Ch. Sirakoulis, Panagiotis Dimitrakis Presenter: <i>Georgios Ch. Sirakoulis</i> , Democritus University of Thrace
16:20-16:35	ORAL	75	Title: The Role of Nitrogen Dopant Configurations on Graphite-Based Field-Effect Transistors Author List: M. Aldrigo, E. Laudadio, E. Mohebbi, E. Pavoni, H. J. Christopher, S. N. Afifa Azman, P. Russo, L. Zappelli, L. Pierantoni, D. Mencarelli Presenter: <i>Luca Pierantoni</i> , Università Politecnica delle Marche
16:35-16:50	ORAL	202	Title: How Geometric and Atomistic Asymmetries Affect Entangled Light Generation in InGaN/GaN Quantum Dots Author List: Aqeel Y. Alalawi, Salim I. Almenshad, Shaikh S. Ahmed Presenter: <i>Aqeel Y. Alalawi</i> , Southern Illinois University

PARALLEL SESSIONS

D4-MR03-AM / Nano-Materials

Wednesday, 8 July, 2026, 10:50-11:35 | VIP201 / 洁行厅

Session Chair: Tseung-Yuen Tseng, Yang Ming Chiao Tung University

Session Chair: Jesus Jacobo Hernandez Montelongo, Catholic University of Temuco

Time	Type	ID	Submission Details
10:50-11:05	ORAL	303	Title: Stanene Nano Islands on Magnetic Topological Insulators Author List: Sajal Barman, Pramod Bhakuni, Shuvam Sarkar, Joydipto Bhattacharya, Mohammad Balal, Mrinal Manna, Soumen Giri, Arnab Pariari, Tomas Skala, Markus Huecker, Rajib Batabyal, Aparna Chakrabarti, Sudipta Roy Barman Presenter: Sudipta Roy Barman, University Grants Commission-Department of Atomic Energy Consortium for Scientific Research
11:05-11:20	ORAL	346	Title: The Surface Engineering of Light Carbonyl Iron Powder Empowers Wideband Absorption and Multi-Functional Integration Author List: Yunpeng Li, Miao Jiang Presenter: Yunpeng Li, Beijing Institute of Technology
11:20-11:35	ORAL	190	Title: Hysteresis in Ambipolar MoTe₂ Field-Effect Transistors Author List: Adolfo Mazzotti, Andrea Sessa, Kimberly Intonti, Francesco De Chiara, Aniello Pelella, Stephen O'Sullivan, Vilas Patil, Paul K. Hurley, Lida Ansari, Farzan Gity, Antonio Di Bartolomeo Presenter: Adolfo Mazzotti, University of Salerno

D4-MR03-PM-A / Nano-Materials & Nano-Acoustic Devices, Processes, and Materials

Wednesday, 8 July, 2026, 14:00-15:20 | VIP201 / 洁行厅

Session Chair: Qicheng Zhang, Westlake University

Session Chair: Jinwook Kim, Kyungpook National University

Session Chair: Xiaodong Xu, Harbin Institute of Technology

Time	Type	ID	Submission Details
14:00-14:20	INVITED	451	Title: 2D Conjugated Polymers as Organic Analogues of Graphene Author List: Federico Rosei Presenter: Federico Rosei, University of Trieste
14:20-14:35	ORAL	424	Title: Protective Sacrificial Layer for Carbon Nanotube Field Effect Transistors: Enhancing Electrical Performance through Surface Protection Author List: Yingnan Yang, Xiao Lei, Wenshan Li Presenter: Yingnan Yang, Shanghai Jiao Tong University
14:35-14:50	ORAL	79	Title: Carbon Black Nanofluid Effectiveness for Solar Thermal Applications Author List: Y. Altoorah, N.F. Aljuwayhel, N. Ali Presenter: Yousef Altoorah, Kuwait University

PARALLEL SESSIONS

14:50-15:05	ORAL	175	Title: Design and Control Methods of TSAW Acoustic Tweezers System for Cellular Sorting Author List: Bo Li, Yaru Wang, Lue Zhang Presenter: <i>Yaru Wang</i> , Soochow University
15:05-15:20	ORAL	446	Title: Ultrasound Nanodroplet Vaporization and Cavitation Thresholds Author List: Jing Wang, Huaiyu Wu, Xiaoning Jiang Presenter: <i>Xiaoning Jiang</i> , North Carolina State University

D4-MR03-PM-B / Spintronics

Wednesday, 8 July, 2026, 15:50-17:40 | VIP201 / 洁行厅

Session Chair: Ke Xia, Southeast University

Session Chair: Zhixin Guo, Xi'an Jiaotong University

Time	Type	ID	Submission Details
15:50-16:10	INVITED	208	Title: Spin Wave Domain Wall Driven Threshold Logic Author List: Pantazis Anagnostou, Arne Van Zegbroeck, Said Hamdioui, Christoph Adelmann, Florin Ciubotaru, Sorin Cotofana Presenter: <i>Sorin Cotofana</i> , Delft University of Technology
16:10-16:25	ORAL	122	Title: Multi-bit Ultra-Fast Memory Based on Topological Antiferromagnetic Domain Wall Author List: Xiaohan Sun, Jiyu Xie, Xinyu Wang, Zhizhong Zhang, Weisheng Zhao, Yue Zhang Presenter: <i>Xiaohan Sun</i> , Beihang University
16:25-16:40	ORAL	176	Title: Double Node Upset Tolerant Design of STT-MRAM with High Speed and Low Power Author List: Chunxia Xie, Yee Chang Lim, Yefan Xu, Shuo Fan, Erya Deng, Chenghua Wang, You Wang, Weiqiang Liu Presenter: <i>Chunxia Xie</i> , Nanjing University of Aeronautics and Astronautics
16:40-16:55	ORAL	91	Title: A Novel Flash-SAR Hybrid ADC with Adjustable Resolution for STT-MRAM Analog In-Memory Computing Author List: Xiangyi Meng, Mingtao Chen, Jiongzhe Su, Hao Cai Presenter: <i>Xiangyi Meng</i> , Southeast University
16:55-17:10	ORAL	220	Title: High-Reliability Multi-Level Cell Voltage-Gated Spin-Orbit Torque Magnetic Random-Access Memory Author List: Luman Xiang, Chao Wang, Zhongzhen Tong, Yulong Qiu, Zhaohao Wang Presenter: <i>Luman Xiang</i> , Beihang University

PARALLEL SESSIONS

17:10-17:25	ORAL	230	Title: A TST-MRAM-Based Low-Latency In-Memory Multi-Bit Adder with Reconfigurable Logic Author List: Guanyu Zhao, Erya Deng, Zhongkun Shen, Yuting Zhang, Weiqiang Liu Presenter: <i>Guanyu Zhao</i>, Nanjing University of Aeronautics and Astronautics
17:25-17:40	ORAL	405	Title: A Parameterized Compiler Framework for SOT-MRAM Macro Generation Author List: Peilin Zhen, Weicheng Lu, Xiaohan Sun, Zhizhong Zhang, Weisheng Zhao, Yue Zhang Presenter: <i>Peilin Zhen</i>, Beihang University

PARALLEL SESSIONS

D4-MR04-AM / Nano-Optics, Nanophotonics, and Nano-Optoelectronics - I

Wednesday, 8 July, 2026, 10:50-11:35 | VIP210 / 以行厅

Session Chair: Yongliang Yang, Shenyang Institute of Automation, Chinese Academy of Science

Session Chair: Hangyu Xu, Shanghai Institute of Technical Physics, Chinese Academy of Sciences

Time	Type	ID	Submission Details
10:50-11:05	ORAL	134	Title: Ferroelectric Modulated Spatial and Temporal Polarization-sensitive Vision Sensors for Information Processing in Visibility-degraded Environments Author List: Zhaoying Dang Presenter: Zhaoying Dang , Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences, Hangzhou, China
11:05-11:20	ORAL	63	Title: Ultracompact Dual-Band Plasmonic BPF Using SRR With SIR for Subwavelength Applications Author List: K. Thirupathaiah K. Thirupathaiah Presenter: K. Thirupathaiah K. Thirupathaiah , Abu Dhabi University
11:20-11:35	ORAL	50	Title: Quantum Noise-Limited Information Capacity in Sub-Wavelength Nanophotonic Waveguides: A Theoretical Study Author List: Praveen Kumar Pal Presenter: Praveen Kumar Pal , Nokia, USA

D4-MR04-PM-A / Nano-Optics, Nanophotonics, and Nano-Optoelectronics - II

Wednesday, 8 July, 2026, 14:00-15:15 | VIP210 / 以行厅

Session Chair: Yi Zou, ShanghaiTech University

Session Chair: Maisarah Mansor, Sunway University

Time	Type	ID	Submission Details
14:00-14:15	ORAL	500	Title: Polarization Control and High-Sensitivity Detection of Integrated Photonic Chips Author List: Chenxi Zhao, Yujie Ma Presenter: Yujie Ma , Shenzhen Technology University
14:15-14:30	ORAL	246	Title: Sensitivity Limits and Regime Transitions in Photonic RF Spectrometry for Ultra-Wideband Spectrum Sensing Author List: Joshua Cole Schuetta Presenter: Joshua Cole Schuetta , Schuetta-Research

PARALLEL SESSIONS

14:30-14:45	ORAL	274	Title: Blackbody-Sensitive 2D Materials and Infrared Applications Author List: Zhen Wang Presenter: <i>Zhen Wang</i> , Shanghai Institute of Technical Physics, Chinese Academy of Sciences
14:45-15:00	ORAL	339	Title: Optical Asymmetric Transmission of Dielectric Cylinders at Different Periodic Scales Author List: Shuai Gao, Chaogang Lou Presenter: <i>Shuai Gao</i> , Southeast University
15:00-15:15	ORAL	440	Title: Dynamic Single-Molecule SERS Detection of Ciprofloxacin by Au Nanopore Author List: Muhammad Usman Amin, Cai Gao, Zhong Wang, Yanru Ding, Yue Yin, Jie Chen, Rijian Mo, Zhenqing Dai, Chengyong Li, Kang Wang Presenter: <i>Muhammad Usman Amin</i> , Guangdong Ocean University

D4-MR04-PM-B / Nano-Optics, Nanophotonics, and Nano-Optoelectronics - III

Wednesday, 8 July, 2026, 15:50-16:50 | VIP210 / 以行厅

Session Chair: Luming Wang, University of Electronic Science and Technology of China

Time	Type	ID	Submission Details
15:50-16:05	ORAL	96	Title: Mechanistic Insights into Solvent-Mediated Structural Properties and Encapsulation Dynamics of Lead-Free $\text{MA}_3\text{Bi}_2\text{Br}_9$ /PDMS for Ultrafast Photonics. Author List: M. Mansor, H. Halip, N.H. Zainol Abidin, A. Amphawan, A. K. Pandey Presenter: <i>Maisarah Mansor</i> , Sunway University
16:05-16:20	ORAL	195	Title: Interfacial Bubble Engineering for High-Performance $\text{Ti}_3\text{C}_2\text{Tx}$ MXene/Si X-ray Detectors Author List: Xuan Ye, Yunfei Xie, Yu Gao, Zijian Pan, Srikrishna Bodepudi, Wenzhang Fang, Bin Yu, Yang Xu Presenter: <i>Xuan Ye</i> , Zhejiang University
16:20-16:35	ORAL	172	Title: Plasmon-Mediated Polarization-Sensitive Photodetection in Germanium-MXene Heterojunctions Author List: Kritika Bhattacharya, Papi Sarkar, Suprovat Ghosh, Aditya Kumar, Kaustuv Das, Samareesh Das Presenter: <i>Kritika Bhattacharya</i> , Indian Institute of Technology Delhi
16:35-16:50	ORAL	200	Title: A new way to benchmark Low-Dimensional Optoelectronic Synapses Author List: Aniello Pelella, Andrea Sessa, Adolfo Mazzotti, Francesco De Chiara, Antonio Di Bartolomeo Presenter: <i>Aniello Pelella</i> , University of Salerno

PARALLEL SESSIONS

D4-MR05-AM / Nano-Energy, Environment, and Safety

Wednesday, 8 July, 2026, 10:50-11:50 | VIP211 / 躬行厅

Session Chair: Pei Song Chee, Universiti Tunku Abdul Rahman

Session Chair: Soon Gil Yoon, Chungnam National University

Time	Type	ID	Submission Details
10:50-11:05	ORAL	34	Title: Spectral Response and Operating Temperature Regulation of Solar Cells Using SrAl₂O₄:(Eu²⁺, Dy³⁺) Phosphors Author List: Ruiqi Zhu, Chaogang Lou, Guoxiang Song, Bowen Shen, Zi Wang Presenter: <i>Ruiqi Zhu</i>, Southeast University
11:05-11:20	ORAL	84	Title: Role of CeO₂/ZrO₂ Molar Ratio in Ni-CeO₂-ZrO₂ Composite Catalysts for Ammonia Decomposition to Hydrogen Author List: Tianyi Zhang, Song Wang Presenter: <i>Tianyi Zhang</i>, National University of Defense Technology
11:20-11:35	ORAL	120	Title: Carbon Quantum Dots (CQD)-Derived from γ-Carrageenan Incorporated into Zinc Oxide (ZnO) as a Photodegradation Catalyst for Persistent Methylene Blue Dye Pollutant Author List: Valerie Johanne C. Teoxon, Micah Charlene B. Lontoc, Rey Eliseo C. Torrejos, Jose M. Esmeria, Jr., Gil Nonato C. Santos, Jose Paolo O. Bantang Presenter: <i>Valerie Johanne Teoxon</i>, De La Salle University
11:35-11:50	ORAL	117	Title: Green Synthesized Silver Nanoparticles (AgNP) Reduced Using Lanzones (Lansium domesticum) Leaves Extract with Multifunctional Role as an Antimicrobial Agent, Catalyst, and Heavy Metal Colorimetric Sensor Author List: Lorenzo Gabriel Janairo, Alexandria Sacay, Jaliyah Dana Cabrera, John William Crame, Bradford Clyde Aguila, Raquel Gonzales, Arra Asejo, Kristian Jude Borres, Jose Esmeria Jr., Gil Nonato Santos, Jose Paolo Bantang Presenter: <i>Jose Paolo Bantang</i>, De La Salle University

D4-MR05-PM-A / Nano-Energy, Environment, and Safety & Nanomagnetism

Wednesday, 8 July, 2026, 14:00-15:15 | VIP211 / 躬行厅

Session Chair: Zhan Yang, Soochow University

Session Chair: Hengjie Yu, Westlake University

Time	Type	ID	Submission Details
14:00-14:15	ORAL	132	Title: Synergistic Enhancement of Photocatalytic Methylene Blue Degradation by In₂O₃/Bi₂O₃ Heterojunction toward Environmental Remediation Author List: Xiaoying Bi Presenter: <i>Xiaoying Bi</i>, Southeast University

PARALLEL SESSIONS

14:15-14:30	ORAL	284	Title: Nanogenerator-Based Energy Harvesting for Self-Charging Power Units Author List: Swathi Ippili, Vankattraju Jella, Soon-Gil Yoon Presenter: <i>Soon-Gil Yoon</i> , Chungnam National University
14:30-14:45	ORAL	227	Title: Micromagnetic Reservoir Computing in Synthetic Antiferromagnets: Role of Interlayer Exchange Coupling Author List: Santhosh Sivasubramani Presenter: <i>Santhosh Sivasubramani</i> , Indian Institute of Technology Delhi
14:45-15:00	ORAL	229	Title: Spin-Orbit Torque Switching of Synthetic Antiferromagnets: Micromagnetic Analysis of RKKY Coupling Effects Author List: Santhosh Sivasubramani Presenter: <i>Santhosh Sivasubramani</i> , Indian Institute of Technology Delhi
15:00-15:15	ORAL	371	Title: A Theoretical Framework for the Optimization of Magneto-Responsive Scaffolds for Hyperthermia Treatment Author List: Matteo B. Lodi Presenter: <i>Matteo Bruno Lodi</i> , University of Cagliari

D4-MR05-PM-B / Nano-biomedicine

Wednesday, 8 July, 2026, 15:50-16:40 | VIP211 / 躬行厅

Session Chair: Matteo Bruno Lodi, University of Cagliari

Session Chair: Xing Sheng, Tsinghua University

Time	Type	ID	Submission Details
15:50-16:10	INVITED	513	Title: Implantable Optoelectronic Devices for Advanced Neural Interfaces Author List: Xing Sheng Presenter: <i>Xing Sheng</i> , Tsinghua University
16:10-16:25	ORAL	80	Title: Phase-Regulated Swarm Control for Nanorobot Collective Transport in Tumor Microenvironments Author List: Jiawei Zou, Shaolong Shi Presenter: <i>Jiawei Zou</i> , Xinjiang University
16:25-16:40	ORAL	337	Title: Cellulose Nanocrystal-Alginate Hydrogels for pH-Triggered Oral Delivery of Sensitive Payloads Author List: Kalindu Perera, Winfred Yeboah, Joseph Batta-Mpouma, Nalinikanth Kotagiri, Jin-Woo Kim Presenter: <i>Kalindu Perera</i> , University of Arkansas

PARALLEL SESSIONS

D4-MR06-AM / Nanoelectronics - I

Wednesday, 8 July, 2026, 10:50-11:50 | VIP208 / 博学厅

Session Chair: Lingxiang Yin, Nanjing University of Aeronautics and Astronautics

Session Chair: Shengman Li, National University of Singapore

Time	Type	ID	Submission Details
10:50-11:05	ORAL	105	Title: TCAD Simulation of sub-2nm CFET with Backside Fin Isolation Structure via BSPDN process for Performance Enhancing Author List: Ningxiang Xu, Yadong Zhang, Feixiong Wang, Zhiyao Wang, Lei Cao, Qingzhu Zhang, Zhenhua Wu, Huaxiang Yin Presenter: <i>Ningxiang Xu</i> , Institute of Microelectronics of the Chinese Academy of Sciences
11:05-11:20	ORAL	149	Title: A Compact Multiplier Design Using Hybrid SET-MOS Technology Author List: Jingping Zhang, Chunhong Chen Presenter: <i>Jingping Zhang</i> , University of Windsor
11:20-11:35	ORAL	112	Title: Experimental and Numerical Investigation on the Characteristics of Laser Induced Graphene-Based Strain Sensor Author List: Xin Zhang, Jinsong Fang, Yan Zhang Presenter: <i>Xin Zhang</i> , Shanghai University
11:35-11:50	ORAL	95	Title: Nanoscale AlGaIn/GaN FinFETs: Enhancement Mode Operation and Multiscale Simulation of Random Defects Author List: Salim Almenshad, Aqeel Alalawi, Shaikh Ahmed Presenter: <i>Salim Almenshad</i> , Southern Illinois University

D4-MR06-PM-A / Nanoelectronics - II

Wednesday, 8 July, 2026, 14:00-15:15 | VIP208 / 博学厅

Session Chair: Erya Deng, Nanjing University of Aeronautics and Astronautics

Time	Type	ID	Submission Details
14:00-14:15	ORAL	156	Title: Electrical Detection of Indigo Dye Using ZnO–Ag Water-Gated Field-Effect Transistors Author List: Theodoros Serghiou, Jeff Kettle Rogerio Morais, Neri Alves, Carlos J.L. Constantino Presenter: <i>Jeff Kettle</i> , University of Glasgow
14:15-14:30	ORAL	160	Title: Optoelectronic Synaptic Characteristics of ZTO/SZO Bilayer Memristor and Its Application in Face Recognition for Neuromorphic Computing Author List: Tzu-Chien Liang, Tseung-Yuen Tseng Presenter: <i>Tseung-Yuen Tseng</i> , Yang Ming Chiao Tung University

PARALLEL SESSIONS

14:30-14:45	ORAL	510	Title: Advancements and Applications in CMOS-Compatible Carbon Nanotube Transfer Technology: From Challenges to Practical Solutions Author List: Beng Kang Tay, Xingli Wang, Rongtao Jiang, Chong Wei Tan, Jianping Zou, Philippe Coquet Presenter: <i>Beng Kang Tay</i> , Nanyang Technological University
14:45-15:00	ORAL	181	Title: Toward Compact Planar Circuits for Atomic-Scale Computing: A Hybrid Crossing Elimination Flow Author List: Benjamin Hien, Marcel Walter, Robert Wille Presenter: <i>Benjamin Hien</i> , Technical University of Munich
15:00-15:15	ORAL	179	Title: Minimizing Area and Delay in Planar Physical Design for Field-coupled Nanocomputing Author List: Benjamin Hien, Marcel Walter, Robert Wille Presenter: <i>Benjamin Hien</i> , Technical University of Munich

D4-MR06-PM-B / Nanoelectronics and nanotechnology for Soft Electronics & Nanoscale Communications

Wednesday, 8 July, 2026, 15:50-16:50 | VIP208 / 博学厅

Session Chair: Beng Kang Tay, Nanyang Technological University

Session Chair: Shuyun Zhuo, Beihang University

Time	Type	ID	Submission Details
15:50-16:05	ORAL	292	Title: Shaping Reliability Analysis of 2D and Thin Film FETs Towards Faster Commercialization Author List: Yu.Yu. Illarionov Presenter: <i>Yury Illarionov</i> , Southern University of Science and Technology
16:05-16:20	ORAL	264	Title: A Bit-Parallel Molybdenum Disulfide Computer Built Through Multi-Level Co-Optimization Author List: Dongxu Fan, Yun Mao, Hao Qiu, Chunsong Zhao, Xinran Wang Presenter: <i>Dongxu Fan</i> , Nanjing University
16:20-16:35	ORAL	97	Title: Hydrogel-Integrated Flexible Spintronic Materials Author List: Songlin Yang, Jin Zhang Presenter: <i>Jin Zhang</i> , University of Western Ontario
16:35-16:50	ORAL	93	Title: Compression-Based Trust Verification of Lightweight Ciphers Deployed in Nano-IoT Communication Standards Author List: David Tom Foss Presenter: <i>David Tom Foss</i> , Independent Researcher

PARALLEL SESSIONS

D4-MR07-AM / Nanofabrication

Wednesday, 8 July, 2026, 10:50-11:35 | VIP206 / 向学厅

Session Chair: Xiaogan Liang, University of Michigan

Time	Type	ID	Submission Details
10:50-11:05	ORAL	302	Title: Capillary-Force-Free Dielectrophoretic Assembly of High-Fidelity Suspended Carbon Nanotubes Author List: Xiao Lei, Wenshan Li Presenter: <i>Xiao Lei</i> , Shanghai Jiao Tong University
11:05-11:20	ORAL	423	Title: Modelling the Use of Augmented Nucleic Acids in Nanostructure Fabrication and Repair Author List: Dominic Lane Presenter: <i>Dominic Lane</i> , Saint Joseph's University
11:20-11:35	ORAL	45	Title: Mechanical Characterization of Shape-Memory Microfibers using a Tensile Testing Platform Fabricated from Two-Photon Polymerization Author List: Timothy Goldsmith, Bahareh Tajvidi Safa, Grayson Minnick, Ruiguo Yang Presenter: <i>Ruiguo Yang</i> , Michigan State University

D4-MR07-PM-A / Quantum, Neuromorphic, and Unconventional Computing - I

Wednesday, 8 July, 2026, 14:00-15:30 | VIP206 / 向学厅

Session Chair: Haifeng Ling, Nanjing University of Posts and Telecommunications

Session Chair: Haoran Sun, Fudan University

Time	Type	ID	Submission Details
14:00-14:15	ORAL	225	Title: A Programmable Memristive Cellular Automaton Architecture for State-Transition Trajectories in Neuromodulation Author List: Ioannis K. Chatzipaschalis, Iosif-Angelos Fyrigos, Antonio Rubio, Georgios Ch. Sirakoulis Presenter: <i>Georgios Ch. Sirakoulis</i> , Democritus University of Thrace
14:15-14:30	ORAL	77	Title: A High-Performance Cyclic-Mapping Encoding for Quantum Computing of Traveling Salesperson Problems on NISQ Devices Author List: J. Wang, T. Kanezashi, D. Tsukayama, K. Awaya, R. Saito, J. Shirakashi Presenter: <i>Juncheng Wang</i> , Tokyo University of Agriculture and Technology
14:30-14:45	ORAL	98	Title: A Digital Oscillator-based Potts Machine for Graph Colouring Problems Author List: Xingjian Gao, Jie Han Presenter: <i>Xingjian Gao</i> , University of Alberta

PARALLEL SESSIONS

14:45-15:00	ORAL	102	Title: Design and Layout of a 22-bit Finite State Machine for Izhikevich Neuron Equations Author List: Torres Chávez Gonzalo Sebastian, Pérez Núñez Raúl, Ramírez Morales Royce-Richmond, Juárez Lora Jorge Alejandro, Molina Lozano Herón, Víctor H Ponce Ponce Presenter: Gonzalo Sebastián Torres Chávez, Instituto Politecnico Nacional CIC
15:00-15:15	ORAL	182	Title: Multi-PUFim Compute-In-Memory Architecture with Multi-Encryption Obfuscation Based on High-Security MRAM PUF Author List: Siying Wu, Jiaqi Xu, Maoxiang Tian, Jiaao Dai, Shuo Fan, Bi Wu, Chenghua Wang, You Wang, Weiqiang Liu Presenter: Siying Wu, Nanjing University of Aeronautics and Astronautics
15:15-15:30	ORAL	144	Title: Entanglement-enhanced Multi-objective Quantum-inspired Computing with Adaptive Density-based Segmentation Author List: Yun-Ting Lai, Shu-Yu Kuo, Yu-Chi Jiang, Yao-Hsin Chou, Sy-Yen Kuo Presenter: Yun-Ting Lai, Chi Nan University

D4-MR07-PM-B / Quantum, Neuromorphic, and Unconventional Computing - II

Wednesday, 8 July, 2026, 15:50-17:20 | VIP206 / 向学厅

Session Chair: Chengning Wang, Huazhong University of Science and Technology

Session Chair: Srikrishna Chanakya Bodepudi, Zhejiang University

Time	Type	ID	Submission Details
15:50-16:05	ORAL	184	Title: A Mixed-signal Parallel Stochastic Computing-in-Memory MRAM Macro for Edge AI Application Author List: Mengjie Liu, Jiaqi Xu, Fang Zhou, Yuxuan Tao, Jiaao Dai, Yu Gong, Bi Wu, Lirida Naviner, You Wang, Weiqiang Liu Presenter: Mengjie Liu, Nanjing University of Aeronautics and Astronautics
16:05-16:20	ORAL	189	Title: Design and Emulation Methodology for Atomic-Scale Systolic Arrays: An LLM Accelerator Case Study in Silicon DB Logic Author List: Samuel S. H. Ng, Marcel Walter, Simon Hofmann, Jan Drewniok, Robert Wille, Konrad Walus Presenter: Samuel Sze Hang Ng, University of British Columbia
16:20-16:35	ORAL	198	Title: BitPlanarNet: Learning-to-Layout Planar Gate Networks for Emerging Devices Author List: Samuel S. H. Ng, Marcel Walter, Max Yuan, Jan Drewniok, Ryan H. Foote, Robert Lupoiu, Jonathan A. Fan, Robert Wolkow, Robert Wille, Konrad Walus Presenter: Samuel Sze Hang Ng, University of British Columbia

PARALLEL SESSIONS

16:35-16:50	ORAL	221	Title: Single layer CMOS-Compatible Self-Selective Array with 10^7 Rectification Ratio Author List: Haoze Yu, Xuemeng Fan, Zijian Wang, Baichen Zhu, Jie Wang, Yishu Zhang Presenter: <i>Haoze Yu</i>, Zhejiang University
16:50-17:05	ORAL	174	Title: Multi-pillar VGSOT-MRAM Crossbar for Energy-Efficient Analog In-Memory Computing Author List: Aymen Romdhane, Kamel-Eddine Sadadou, Bruno Lovison-Franco, Mohammed-Amine Laamouri, David Novo, Lorena Anghel, Pascal Benoit, Guillaume Prenat, Jonathan Miquel Presenter: <i>Aymen Romdhane</i>, French Alternative Energies and Atomic Energy Commission
17:05-17:20	ORAL	57	Title: Design of Median Filters in Stochastic Computing Author List: Yongqiang Zhang, Defang Meng, Jie Han, Shaowei Wang, Guangjun Xie Presenter: <i>Yongqiang Zhang</i>, Hefei University of Technology

PARALLEL SESSIONS

D4-MR08-AM / Nanomechanics

Wednesday, 8 July, 2026, 10:50-11:20 | VIP205 / 思学厅

Session Chair: Jianying He, Norwegian University of Science and Technology

Time	Type	ID	Submission Details
10:50-11:05	ORAL	128	Title: Low-Temperature Pressureless Sintering of Surface Modified Non-Dewetting Cu@Ag Bimodal Conductive Paste for Electronic Packaging Author List: Yuan Zou Presenter: <i>Yuan Zou</i> , Southeast University
11:05-11:20	ORAL	448	Title: Machine Learning-Driven Metastructure Design for Sensor-Free Linearization of MEMS Electrothermal Actuator for Mechanical Characterizations of 2D Materials Author List: Changhong Cao, Lingzhi Zhang, Hossein Mofatteh, Yu Sun, Abdolhamid Akbarzadeh Presenter: <i>Changhong Cao</i> , McGill University

D4-MR08-PM-A / Nanosensors and Nanoactuators

Wednesday, 8 July, 2026, 14:00-15:30 | VIP205 / 思学厅

Session Chair: Attila Bonyár, Budapest University of Technology and Economics

Session Chair: Xuqian Zheng, Nanjing University of Posts and Telecommunications

Time	Type	ID	Submission Details
14:00-14:15	ORAL	185	Title: Design and Fabrication of a Multi-layered MEMS Sensor and Semiconductor Nanocrystals-Based Gas Sensing Applications Author List: Zihan Wang, Meixuan Li, Aoran Shen, Chunqing Li, Xinran He, Zhenxing Ye, Feifei Deng, Yunong Zhao, Xiaohui Guo Presenter: <i>Zihan Wang</i> , Anhui University
14:15-14:30	ORAL	196	Title: Comparative NH ₃ Gas Sensing Characteristic of MoS ₂ and MoS ₂ /NiS Nanocomposite Coated Plastic Optical Fibers Author List: Nor Akmar Mohd Yahya, Mohd Rashid Yusof Hamid, Abdul Hadi Ismail, Nurul Atiqah Izzati Md Ishak, Mohd Hanif Yaacob, Saidur Rahman Presenter: <i>Nor Akmar Mohd Yahya</i> , Sunway University
14:30-14:45	ORAL	370	Title: Laser-Induced Conductive Micro-nano structures on Carbon Black/PDMS Composite for Flexible Pressure Sensing Application Solution Author List: Yu Bin Lee, Seok-Hoon Choi, Min-Ho Seo Presenter: <i>Yubin Lee</i> , Pusan National University
14:45-15:00	ORAL	398	Title: Nanowire Array Breath Acetone Sensor for Diabetes Monitoring Author List: Shiyu Wei, Lan Fu Presenter: <i>Shiyu Wei</i> , Hefei University of Technology

PARALLEL SESSIONS

15:00-15:15	ORAL	232	Title: Comparative Performance Analysis of PEDOT:PSS Organic Electrochemical Transistors with 6% and 10% D-Sorbitol Additives Author List: Alejandro Bello, Fahian Mahmud, Ashok Kumar, Vinay Budhraj Presenter: <i>Vinay Budhraj</i>, Northern Illinois University
15:15-15:30	ORAL	103	Title: Slot Waveguide Integrated Biosensor With Intermediate Buffer Layers for Measuring Temperature Author List: Kamakshi Manchikalapati, Yamini Govindraj, Shriraam S J, Janani R, Gopalkrishna H, Srinivas Talabattula Presenter: <i>Srinivas Talabattula</i>, Indian Institution of Science, Bangalore

POSTER SESSIONS

Poster Session 01

Monday, 6 July, 2026, 15:50-17:50 | Sanjiang Lecture Hall Foyer / 三江报告厅前厅

Board No.	ID	Submission Details
#1	14	Title: A Device Modeling Framework for Emerging Transistors of New Material and Advanced Structure Author List: Siyuan Wang, Xiangli Li, Lingpeng Bao, Hongwei Liu, Minghui Yin, Weihua Zhang, Yunxia You, Huanhuan Zhou, Chen Wang, Baisheng Peng Presenter: <i>Hongwei Liu</i>, Institute of Microelectronics, Chinese Academy of Sciences
#2	54	Title: A PMMA-Modified Gelatin/ITZO Synaptic Transistor for Recyclable and In-Sensor Edge Computing Systems Author List: Mingchao Wu, Yao Ni, Yuan Liu Presenter: <i>MingChao Wu</i>, Guangdong University of Technology
#3	65	Title: Organic Optoelectronic Synaptic Transistors Toward Hardware-Aware Transfer Learning for Satellite Scene Classification Author List: Zhonglin Zhang, Kuakua Lu, Yunfei Tian, Qijing Wang Presenter: <i>Zhonglin Zhang</i>, Nanjing University
#4	67	Title: Design of an Adaptive Third-Order Fixed-Time Integral Sliding-Mode Controller for XY Compliant Parallel Micromanipulator Systems Author List: Rungeng Zhang, Zehao Wu, Weijian Zhang, Qingsong Xu Presenter: <i>Zehao Wu</i>, University of Macau
#5	72	Title: Material Effects on Polarization Reversal: A Theoretical Comparison between Doped AlN and GaN Wurtzite Systems Author List: Yuan He, Kan-Hao Xue, Xiangshui Miao, Dongdong Li, Liang Zhao Presenter: <i>Yuan He</i>, Zhejiang University
#6	82	Title: Cost-Effective Indium-Free Ga-Sn-O Synaptic Transistor with Rich Dynamics for Brain-Inspired Computing Author List: Xingji Liu, Yao Ni, Yuan Liu Presenter: <i>Xingji Liu</i>, Guangdong University of Technology
#7	90	Title: Sm-Doped HfO₂ Ferroelectric Memristors with Emulated Synaptic Plasticity Directly Deposited on Si Substrates Author List: Jiao Bai, Yijun Cui, Weiwei Li Presenter: <i>Jiao Bai</i>, Nanjing University of Aeronautics and Astronautics
#8	100	Title: A Low-Power Non-volatile TCAM with 2-Bit Encoding and Dynamic Power Gating Author List: Erya Deng, Qingting Hu, Zhongkun Shen, You Wang, Hao Kang, Weiqiang Liu Presenter: <i>Erya Deng</i>, Nanjing University of Aeronautics and Astronautics

POSTER SESSIONS

Board No.	ID	Submission Details
#9	218	Title: An Energy-Efficient Time-Domain CIM Macro With Self-Referenced Scheme for STT-MRAM Author List: Hao Kang, Erya Deng, Qingting Hu, Zhongkun Shen, Weiqiang Liu Presenter: <i>Erya Deng</i>, Nanjing University of Aeronautics and Astronautics
#10	125	Title: Analysis and Design of Impedance- Tunable Nanoparticle–Epoxy Acoustic Hologram Lenses for Multifocal Ultrasound Fields Author List: Hoseok Kang, Jonghun Lee, Haesu Byeon, Haseeb Khan, Jinwook Kim Presenter: <i>Jonghun Lee</i>, Kyungpook National University
#11	154	Title: A Ternary Inverter Based on Carbon Nanotube/Molybdenum Disulfide Heterojunction Author List: Meiqi Xi, Yong Zhang, Haoyun Liu, Xuehao Zhu, Zirui You, Xuelei Liang Presenter: <i>Meiqi Xi</i>, Peking University
#12	171	Title: Mixed-Precision Floating-Point Arithmetic for Highly Accurate Artificial Neural Networks Author List: Farzad Niknia, Ziheng Wang, Shanshan Liu, Pedro Reviriego, Zhen Gao, Fabrizio Lombardi Presenter: <i>Shanshan Liu</i>, University of Electronic Science and Technology of China
#13	104	Title: A Multimodal Wearable Bioelectronic System Enabling Silent-Speech Human-Computer Interaction Author List: Linhui Wang, Ziang Cui, Ze Xiong Presenter: <i>Linhui Wang</i>, ShanghaiTech University
#14	240	Title: Machine Learning-Based Inverse Design of Magnetic Nanoparticle Hyperthermia Under Brezovich Safety Constraints Author List: Augustine Boakye Yiadom, Kingsley Amponsah Presenter: <i>Augustine Boakye Yiadom</i>, Kwame Nkrumah University of Science and Technology
#15	249	Title: Optimization Research on MoTe₂ Memristors: Size and Temperature Effects Author List: Yuqing Zhang, Xinfei Guan, Xu Jing, Li Tao Presenter: <i>Yuqing Zhang</i>, Southeast University
#16	261	Title: Binary-Solvent-Controlled Growth of Quasi-2D Perovskite Single Crystals With Aromatic-Spacers for Stable Photodetection Author List: Tianle Liu, Yuljae Cho Presenter: <i>Tianle Liu</i>, Shanghai Jiao Tong University
#17	271	Title: Scaled Crystalline Antimony Ohmic Contacts for Two-Dimensional Transistors Author List: Mingyi Du, Weisheng Li, Guangkai Xiong, Lei Liu, Xilu Zou, Taotao Li, Dongxu Fan, Zhihao Yu, Hao Qiu, Xinran Wang Presenter: <i>Mingyi Du</i>, Nanjing University

POSTER SESSIONS

Board No.	ID	Submission Details
#18	280	Title: Enhancing Lithium Iron Phosphate as a Cathode Material by Codoping with Nickel and Silicon: A First-Principles Study Author List: Yelak F. Abebe, Arindam Sannyal, Kisang Byun, Mengdi Zhao, Joonkyung Jang Presenter: <i>Yelak Abebe</i>, Pusan National University
#19	296	Title: Computational Design of Water-Resistant Adhesives Mimicking the Mussel Foot Proteins Author List: D. Fatima, S. Vuppala, J. Kim, M. Zhao, J. Jang Presenter: <i>Dua Fatima</i>, Pusan National University
#20	299	Title: Plasma Emission Characteristics during Sputtering of Thulium Iron Garnet Author List: Lei Yan, Masaharu Shiratani, Naoto Yamashita Presenter: <i>Lei Yan</i>, Kyushu University
#21	307	Title: Threshold Switching in Elemental Disordered Tellurium Realized by On-Device Cryogenic Melt-Quenching Author List: Namwook Hur, Seunghwan Kim, Yu Bin Park, Changhwan Kim, Sohui Yoon, Youngseok Cho, Tae Hoon Lee, Joonki Suh Presenter: <i>Namwook Hur</i>, Ulsan National Institute of Science and Technology
#22	348	Title: Green Synthesis, Characterization, and Biomedical Activity of Silver Nanoparticles Using Kleinia anteuphorbium Aqueous Extract Author List: My Ali, A. Kishk, M. Dowaidar Presenter: <i>Mohamed Yassin</i>, King Fahd University of Petroleum and Minerals

POSTER SESSIONS

Poster Session 02

Tuesday, 7 July, 2026, 15:50-17:50 | Sanjiang Lecture Hall Foyer / 三江报告厅前厅

Board No.	ID	Submission Details
#1	319	Title: Nanoscale Interface Engineering of CoWO₄/Co₃O₄ Nanorod Heterostructures for Efficient Water Oxidation Author List: Dhandayuthapani Thiyagarajan, Bong-Kee Lee Presenter: <i>Dhandayuthapani Thiyagarajan</i>, Chonnam National University
#2	328	Title: Multi-Timescale Reservoir Computing via Co-Integrated Ionic-Electronic Dynamic System for Adaptive Temporal Inference Author List: Gilhwan Do, Hanbin Cho, Joonki Suh Presenter: <i>Gilhwan Do</i>, Korea Advanced Institute of Science and Technology
#3	332	Title: Robust Skin-Interfaced Wearable Sensors Based on Stiffness- and Adhesion-Memory Materials Author List: Jince Zhao, Shuyun Zhuo Presenter: <i>Shuyun Zhuo</i>, Beihang University
#4	335	Title: Device Variability-Aware Synaptic Architectures for Robust Memristor Neural Networks Author List: Aiden Graham, Zohreh Hajiabadi, Omesh Kapur, Ruomeng Huang, Firman Simanjuntak Presenter: <i>Aiden Graham</i>, University of Southampton
#5	341	Title: In-situ Exsolved Bimetallic Nanoparticles on Double Perovskite for Efficient CO₂ Electrolysis and Synergistic Methane Reforming in SOEC Author List: Xiaoyu Wang, Xifeng Ding Presenter: <i>Xiaoyu Wang</i>, Nanjing University of Science and Technology
#6	355	Title: Impact of Thermocompression-Induced Buckling on SubTerahertz Electrical Performance of Vertically Aligned Carbon Nanotube-Based Passive Devices Author List: Rongtao Jiang, Ankit Kumar Verma, Johannes Eduard Stubbe, Jianping Zou, Chong Wei Tan, Amit Kumar, Dominique Baillargeat, Stephane Bila, Philippe Coquet, Beng Kang Tay Presenter: <i>Beng Kang Tay</i>, Nanyang Technological University
#7	359	Title: Dual-Functional Photothermal-Responsive PVDF-HFP/CDs@BN Nanofibrous Membranes for Advanced Oil-Water Remediation Author List: Shichen Li, Bong-Kee Lee Presenter: <i>Shichen Li</i>, Nantong University
#8	360	Title: Nanoparticle-Functionalized Microfluidic Bioelectric Sutures for Enhanced Electrochemical Sensing and Stimulation Author List: Chanhui Park, Dae-Hyeong Kim Presenter: <i>Chanhui Park</i>, Seoul National University

POSTER SESSIONS

Board No.	ID	Submission Details
#9	368	Title: Simulation of Electrostatic Quantum Dots with Mixed Finite Element Method Author List: Yingjia Gao, Zifeng Wang, Andrei G. Shvarts¹, Łukasz Kaczmarczyk, Vihar Georgiev Presenter: <i>Yingjia Gao</i>, University of Glasgow
#10	378	Title: Welding Control of Gold Nanoparticle Assembly for Stretchable Bioelectronics Author List: Jeeyoung Kim, Dae-Hyeong Kim Presenter: <i>Jeeyoung Kim</i>, Seoul National University
#11	380	Title: Reconfigurable Oxygen-Vacancy-Driven Conductance Switching in Layered α-MoO₃ Author List: Jeongin Yeo, Seonguk Yang, Gilhwan Do, Changjun Park, Mingyu Jang, Namwook Hur, Joonki Suh Presenter: <i>Jeongin Yeo</i>, Ulsan National Institute of Science and Technology
#12	384	Title: Ultrasound-Driven Triboelectric Nanogenerators with Acoustically Engineered Metal Mesh Electrodes Author List: Ki-Yoon Park, Hong-Joon Yoon Presenter: <i>Ki-Yoon Park</i>, Gachon University
#13	385	Title: Modulation of Crystallinity in Electrospun P(VDF-TrFE) Nanofibers via Solvent Control for Multifunctional Energy Harvesting Author List: Yongbin Han, Hong-Joon Yoon Presenter: <i>Yongbin Han</i>, Gachon University
#14	388	Title: Estimation of Surface Potential of PMMA and Ni-P Microparticles from Levitation in a Plasma Sheath Author List: M. Lou, T.Sugita, K.Kamataki, M. Shiratani Presenter: <i>Minghao Lou</i>, Kyushu University
#15	392	Title: An Investigation on the Effects of High Crosslinking Density in Conductive Polymers on Thermal and Electrical Properties Author List: Seong Hyeok Park, Saeyoung Park, Yeon-Jeong Hwang, Min-Ho Seo Presenter: <i>Seong Hyeok Park</i>, Pusan National University
#16	399	Title: In-Situ Single Molecule Nanorobot Quantifies Transmembrane Protein Recognition at Human Blastocyst Endometrium Interface Author List: Yuxuan Xue, Liang Ma, Yichen Wang, Xiao Luo, Xinyu Liu, Ning Xi Presenter: <i>Yuxuan Xue</i>, The University of Hong Kong
#17	413	Title: Thickness-Dependent Magnetisation Reversal in CrTe₂ van der Waals Magnets Author List: Aishah Mughal, Matthew Bryan Presenter: <i>Aishah Mughal</i>, Royal Holloway, University of London

POSTER SESSIONS

Board No.	ID	Submission Details
#18	427	Title: Flexible PtSe₂ Transistors with Negligible Mobility Degradation under Strain Author List: Bo Wang, Zhehan Wang, Linghan Fang, Haoyuan Xu, Linbo Sun, Yichen Liu, Li Tao Presenter: <i>Bo Wang</i>, Southeast University
#19	428	Title: A Power Consumption Survey of 6 State-of-the-Art Low Power Flip-Flops In Light Of Modern Data Centre Dominated Landscape Author List: Polukh Polukhov, Dr Peiyi Zhao Presenter: <i>Peiyi Zhao</i>, Chapman University
#20	441	Title: Sequence-Dependent Single-Molecule DNA Sensing Using 2D COF-Phospholipid Composite Nanopore Author List: Tong Wang, Chuning Hu, Yuqian Huang, Yuhuan Wang, Changpeng Yao, Kang Wang Presenter: <i>Tong Wang</i>, Nanjing University
#21	177	Title: Dynamic Processes in Chemical-Vapor Deposition of Transition-Metal Dichalcogenides Revealed by AI-Driven Operando Metrology Author List: Mingwei Feng, Xilu Zou, Haotian Zhang, Caiqi Zou, Silin Chen, Wei Xu, Xiaotian Zhang, Taotao Li, Ningmu Zou Presenter: <i>Mingwei Feng</i>, Nanjing University

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