IEEE NANO
NANOTECHNOLOGY COUNCIL

25th IEEE International Conference on Nanotechnology

IEEE-NANO 2025 Conference Guide

Washington, DC USA

13-17 July 2025

IEEE-NANO 2025 | 25 YEARS
13-16 July 2025, Washington DC, USA

Table of Contents - IEEE-NANO Conference Guide

Welcome to the 25th IEEE International Conference on Nanotechnology (IEEE-NANO 2025)

Dear Colleagues, Friends, and Participants,

On behalf of the Organizing Committee, it is our great pleasure to welcome you to the 25th IEEE International Conference on Nanotechnology (IEEE-NANO) that is to be held on July 14-16, 2025 in Washington, DC.

IEEE-NANO is an annual conference sponsored by the IEEE Nanotechnology Council (IEEE NTC) and rotates between Regions 1-7 & 9 (North and South America,) Region 8 (Europe, Africa and the Middle East,) and Region 10 (Asia and Australasia). This year's conference marks the 25th anniversary of IEEE-NANO and brings together a diverse group of researchers, educators, industry professionals, and students from around the globe. Since its founding in 2001, IEEE-NANO has been the flagship conference of the IEEE Nanotechnology Council. The sustained support and promotion of advanced research in nanotechnology *via* IEEE-NANO conferences is unsurpassed in the technical community, witnessing the journey of nanotechnology from the theme of carbon nanomaterials for the 1st IEEE-NANO conference to the nanoelectronics powered artificial intelligence and quantum computing, and nanotechnology enabled nanomedicine for the 25th IEEE-NANO.

The technical program features plenary and keynote speakers, technical sessions, panel discussions, and special sessions designed to foster dialogue on the latest breakthroughs and emerging trends. We are also excited to offer workshops, tutorials, webinars and opportunities for networking that we hope will lead to new ideas, partnerships, and future innovations.

Without a doubt, IEEE-NANO 2025 will not have been successful without the commitment and contributions from authors, reviewers, conference participants, and sponsors. We would like to express our sincere gratitude to the Technical Program Committee, reviewers, session chairs, sponsors, and volunteers whose efforts have been vital in making this conference possible. We would also like to thank all of you—our participants—for your contributions and for joining us in this exciting journey.

We hope you will enjoy not only the rich technical content but also the cultural and social experiences that Washington DC has to offer.

Welcome to IEEE-NANO 2025, and we look forward to an inspiring and productive event.

Best wishes to you all!

Bonnie Gray, Simon Fraser University, CANADA
Xiaoning Jiang, North Carolina State University, USA
Kremena Makasheva, CNRS, University of Toulouse, FRANCE
James Spicer, Johns Hopkins University, USA

IEEE-NANO 2025 General Co-Chairs

Welcome from the Program Chair of IEEE-NANO 2025

Dear Colleagues,

On behalf of the Technical Program Committee, I would like to express our great pleasure in welcoming you to the **2025 IEEE International Conference on Nanotechnology (IEEE-NANO)**.

It has been a great honor for me to serve as Program Chair for IEEE-NANO 2025. I am deeply grateful to the Conference Chairs—especially Jim Spicer—for their outstanding efforts in organizing this event, and to the members of the Program Committee, particularly the Program Co-Chairs Weiqiang Liu, Monica La Mura, and Vamsi Borra, for their support with the core tasks of defining the conference program.

IEEE-NANO is the flagship conference of the IEEE Nanotechnology Council, and the enthusiasm we witnessed over the past months—from both the organizing team and the many authors who submitted their research—clearly reflects its importance in the field.

In this 25th edition of IEEE-NANO, we once again have the opportunity to explore cutting-edge developments in nanoscience and nanotechnology. The program features six plenary and nine keynote lectures by highly distinguished scientists. It also includes a rich schedule of parallel sessions, comprising 24 special sessions and 20 technical sessions, with 126 invited speakers, 130 contributed talks, and 40 poster presentations. I am confident the program will address current challenges and explore future frontiers in nanotechnology.

I wish everyone a productive and inspiring conference, where meaningful exchanges and networking can foster strong and lasting collaborations.

Welcome to Washington, DC, and to the 2025 IEEE International Conference on Nanotechnology!

Vito Puliafito, Polytechnical University of Bari, ITALY

IEEE-NANO 2025 Program Chair

Sponsors

We gratefully acknowledge the generous support of the following Sponsors for the 25th IEEE International Conference on Nanotechnology:

IEEE NANO
NANOTECHNOLOGY COUNCIL

JOHNS HOPKINS
RALPH O'CONNOR SUSTAINABLE ENERGY INSTITUTE

ORAU

IEEE young professionals

NC STATE UNIVERSITY

ANGSTROM ENGINEERING
Your Thin Film Partner

NSF

Quick and Direct Online Access to the Technical Program

Scan this code for access:

Organizing Committee

General Co-Chairs

Bonnie Gray: Simon Fraser University, CANADA
Xiaoning Jiang: North Carolina State University, USA
Kremena Makasheva: CNRS, University of Toulouse, FRANCE
James Spicer: Johns Hopkins University, USA

Program Committee

Vito Puliafito (Chair): Politecnico di Bari, ITALY
Weiqiang Liu (Co-Chair): NUAA, CHINA
Monica La Mura (Co-Chair): Roma Tre University, ITALY
Vamsi Borra (Co-Chair): Youngstown State University, USA
Mak Paranjape: Georgetown University, USA
Tao Li: Southeast University, China
Alan Wang: Baylor University, Waco, USA
Antonio Di Bartolomeo: Università di Salerno, Italy
Attila Bonyár: Budapest University of Technology and Economics, Hungary
Cunjiang Yu: University of Illinois, Urbana-Champaign, USA
Dongliang Jing: Northwest A&F University, China
Elenoire Vissol-Gaudin: Nanyang Technological University, Singapore
Giovanni Finocchio: University of Messina, Italy
Inkyu Park: KAIST, Korea
King Fong (Thomas) Lei: Chang Gung University, Taiwan
Lan Fu: Australian National University, Canberra
Lin Lin: Tongji University, Shanghai, China
Markondeyaraj Pulugurtha: Florida International University, Miami, USA
Moitreyee Mukherjee-Roy: IBM Research, USA
Oluwaseyi Balogun: Northwestern University, Evanston, USA
Pramey Upadhyaya: Purdue University, West Lafayette, USA
Priya S. Balasubramanian: IEEE NTC, USA
Quinn Qiao: Syracuse University
Renaud Bachelot: University of Technology of Troyes, France
Roza Kotlyar: Stardust Secured, USA
Tao Wu: ShanghaiTech University, China
Wenzhuo Wu: Purdue University, West Lafayette, USA
Yu-Lun Chueh: National Tsing Hua University, Taiwan
Zheng Fan: University of Houston, USA
David Shrekenhamer: Johns Hopkins Applied Physics Laboratory, USA

Publicity

Murty Polavarapu: Virginia Microelectronics Consortium, USA
Marta Wala-Kapica: Silesian University of Technology, POLAND
María Salvador: Universidad de Oviedo, SPAIN
Ian Chege: IEEE NTC, KENYA
Marko Mladenovic: ETH Zurich, SWITZERLAND
Hyokyung Lim: POSTECH, SOUTH KOREA

Communications Committee
Vamsi Borra: Youngstown State University, USA
Ed Perkins: IEEE NTC, USA
Susanna Thon: Johns Hopkins University, USA

Young Professionals and Early Career Committee
Rafal Sliz (Chair): University of Oulu, FINLAND
Ethan Ahn (Co-Chair): George Mason University, USA
Matteo Bruno Lodi: University of Cagliari, ITALY

Sponsorships Committee
Gina Adam (Chair): George Washington University, USA
Liang Dong: Iowa State University, USA

Awards Committee
Michael Adachi (Chair): Simon Fraser University, CANADA

NSF Student Fellowship Committee
Yong Zhu (Chair): North Carolina State University, USA
Michael Adachi: Simon Fraser University, CANADA
Xiaoning Jiang: North Carolina State University, USA

Publications
Antonio Di Bartolomeo: University of Salerno, ITALY
Francesca Urban: Drexel University, USA
Aniello Pelella: Università di Roma Tor Vergata, ITALY

International Outreach
Murilo Romero: University of Sao Paulo, BRAZIL

IEEE NANO 25th Anniversary
Shanshan Liu, University of Electronic Science and Technology of China, CHINA
Xiaoning Jiang: North Carolina State University, USA
Clifford Lau: Institute for Defense Analyses, USA
Jin-Woo Kim: University of Arkansas, USA
Kremena Makasheva: CNRS, University of Toulouse, FRANCE
James Spicer: Johns Hopkins University, USA

Finance Chair
Lee Oien, IEEE Oregon Section, USA

Registration Chair
Lixin Dong, City University of Hong Kong, CHINA

Local Arrangements Committee
Robert Osiander (Chair): Johns Hopkins Applied Physics Laboratory, USA
Gina Adam: George Washington University, USA
Ethan Ahn: George Mason University, USA
Mak Paranjape: Georgetown University, USA

Associate Editors

Michael Adachi
Gina Cristina Adam
Anant Anantram
Renaud Bachelot
Priya S. Balasubramanian
Oluwaseyi Balogun
Attila Bonyár
Vamsi Borra
Antia Botana
Yu-Lun Chueh
Antonio Di Bartolomeo
Alexander Edwards
Zheng Fan
Giovanni Finocchio
Vladimir M. Fomin
Lan Fu
Dustin Gilbert
Filippo Giubileo
Bonnie L. Gray
Mariagrazia Graziano
Josh Hihath
Michelle Jamer
Xiaoning Jiang
Dongliang Jing
Jesse Jokerst
Amandeep Kaur
Pedram Khalili Amiri
Roza Kotlyar
Monica La Mura
Jean-Pierre Leburton
Kin Fong Lei
Huamin Li
Lin Lin
Weiqiang Liu
Luyao Lu
Nadia Martucciello
James E Morris
Moitreyee Mukherjee-Roy
Dmitri Nikonov
Makarand Paranjape
Inkyu Park
Yannis Paulus
Vito Puliafito
Markondeyaraj Pulugurtha
Quinn Qiao
Carlos Sabater
Jialin Shi
Masaharu Shiratani
Li Tao
Pramey Upadhyaya
Ashok Vaseashta
Simon Vecchioni
Eléonore Vissol-Gaudin
Alan Wang
Tao Wu
Wenzhuo Wu
Yongliang Yang
Zhan Yang
Cunjiang Yu
Yong Zhu
Xiaoying Zhuang
Linda Angela Zotti

Program at a Glance: Overview

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
	13 JULY	14 JULY	15 JULY	16 JULY	17 JULY
08:00		Opening			
08:15		Plenary Talk	Plenary Talk	Plenary Talk	
08:30	IEEE-NANO 2025 YOUTH DAY				REGION 9 TUTORIAL DAY
08:45					
09:00		Plenary Talk	Plenary Talk	Plenary Talk	
09:15					
09:30					
09:45		Coffee Break + Posters X	Coffee Break + Posters Y	Coffee Break + Posters Z	
10:00					
10:15					
10:30		Parallel Sessions A	Parallel Sessions D	Parallel Sessions G	
10:45					
11:00					
11:15					
11:30					
11:45					
12:00					
12:15					
12:30		Lunch	Lunch (NSF Panel)	Lunch (Student Design Competition)	
12:45					
13:00					
13:15					
13:30					
13:45		Keynote Talks	Keynote Talks	Keynote Talks	
14:00					
14:15		Parallel Sessions B	Parallel Sessions E	Parallel Sessions H	
14:30					
14:45					
15:00					
15:15		Coffee Break + Posters X	Coffee Break + Posters Y	Coffee Break + Posters Z	
15:30					
15:45					
16:00		Parallel Sessions C	Parallel Sessions F	Parallel Sessions I	
16:15					
16:30					
16:45					
17:00					
17:15					
17:30					
17:45					
18:00				Closing	
18:15					
18:30					
18:45					
19:00			Banquet - 25th Anniversary and Awards Ceremony		
22:00					

Program at a Glance: 14 July 2025

Room >	Plenary Room		Studio A		Studio B		Studio D		Studio E		Salon 5		Salon 6		Salon 7	
MONDAY																
14 JULY 2025																
08:00	Opening															
08:15	Plenary Talk #1 - **Lihong Wang** **Plenary Room - Salon 1-4**															
08:30																
08:45																
09:00	Plenary Talk #2 - **Osvaldo Oliveira** **Plenary Room - Salon 1-4**															
09:15																
09:30																
09:45	Coffee Break + Poster Session X															
10:00																
10:15																
10:30	A0 - Sp511 Nano for Biointerfaces	**Bai**	A1 - TS07 Nanoelectronics	Walter	A2 - Sp523 Topology Meets Magnetism: Unraveling Spin Textures in Quantum Materials	**Streubel**	A3 - Sp520 Simulation of ferroelectric materials and devices	**H. Park**	A4 - Sp507 Engineering Molecular Systems to Drive Advancements in Electronics	**Hihath**	A5 - Sp513 Nanomaterials-based smart wearables	**Y. Du**	A6 - Sp522 Topological Materials for Electronics: Concepts to Applications	**Khan**	A7 - TS11 Nanomaterials	Kachouei
10:45		**Y. Zhang**		Pfeiffer		**Petford-L.**		**Ross**		**Ardesi**		**Bedewi**		**Yusufoglu**		Guzman
11:00				Hofmann												Ashmeg
11:15				Dehzangi				**Seabaugh**		**Zotti**		**Bai**		**Ghosh**		D. Wu
11:30				Chen		**DeBeer-S.**										Ruotolo
11:45				Takemoto												Obaemo
12:00				Bardea		**Batista**		**Z. Yao**		**Vezzoli**		**Niu**		**Sinitskii**		Dimaggio
12:15				Shur												Yeow
12:30	Lunch break **Plenary Room - Salon 1-4**															
12:45																
13:00																
13:15																
13:30																
13:45	Keynote Talks >>>				**Gerhard Klimeck** **Studio B**				**Giovanni Finocchio** **Studio E**				**Michael Strano** **Salon 6**			
14:00																
14:15			B1 - TS02 Emerging Plasma Nanotechn.	Shur	B2 - Sp503 Adv. Spintr. Techn. with 2D Materials	**J. Lee**	B3 - TS04 Modeling & Simulation (+Sp520)	Hossain	B4 - TS09 Nanofabrication	Kim	B5 - Sp513 Nanomat. smart wearables	**El-Atab**	B6 - Sp506 Electro-Nanofluidics	**Hylin**	B7 - TS13 Nano-Optics, Photonics, and Optoel.	C.-F. Lin
14:30				A. Wu		**Wines**		Lodi		Addo-Mensah						J.-K. Lee
14:45				T. Chan				Dehzangi		Bhave		**C. Yu**		**Leburton**		Viscardi
15:00				J. Zhong				Luo		Boiko						
15:15	Coffee Break + Poster Session X															
15:30																
15:45																
16:00	C0 - Sp511 Nanomaterials and Nanotechnologies for Bio-interfaces	**C. Yu**	C1 - TS05 Nano-Acoustic Devices, Processes, and Materials (+TS12)	J. Wang	C2 - Sp508 From Spintronics to Devices-Current Topics in Nanomagnetism	**Gopman**	C3 - Sp520 Simulation of ferroelectric materials and devices	**Rakheja**	C4 - Sp510 Molecular conductors: spin filtering and thermoelectric properties	**Palacios**	C5 - Sp505 Cutting-Edge Nanotechnology in ocular applications	**R. Chen**	C6 - Sp506 Electro-Nanofluidics: Electron-Ion Interactions in Bio-Nanoelectronic Systems	**Zotti**	C7 - TS07 Nanoelectronics	**Di Bartolomeo**
16:15				Patterson												
16:30		**Zhao**		M. Chen		**Gilbert**		**Sonawane**		**Yelishala**		**Uddin**		**Vecchioni**		**Cagin**
16:45				Yeow												
17:00		**J. Li**		Ryu		**Abel**		**Pierantoni**		**Vezzoli**		**Paulus**		De		Mazzotti
17:15				Majumder												Cabanillas
17:30				T. Yu		**Barua**		**Gupta**		**Sabater**						D. Jang
17:45																Bappy
18:00																
18:15																
18:30																
18:45																
19:00																
22:00																

Program at a Glance: 15 July 2025

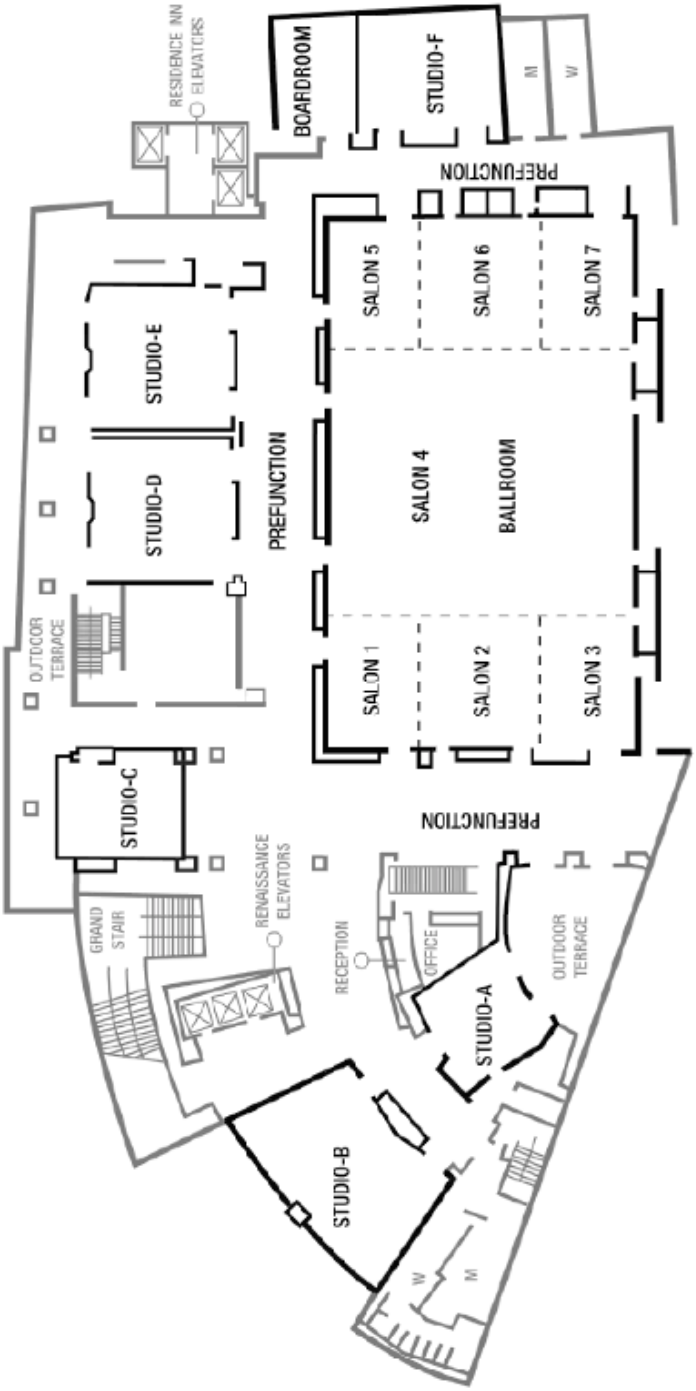
Room >	Plenary Room		Studio A		Studio B		Studio D		Studio E		Salon 5		Salon 6		Salon 7	
TUESDAY																
15 JULY 2025																
08:00																
08:15	Plenary Talk #3 - **Yu Sun** **Plenary Room - Salon 1-4**															
08:30																
08:45																
09:00	Plenary Talk #4 - **Stella Pang** **Plenary Room - Salon 1-4**															
09:15																
09:30																
09:45	Coffee Break + Poster Session Y															
10:00																
10:15																
10:30	D0 - TS17 Nanosensors and Nanoactuators	Kachouei	D1 - TS06 Nanobiomedicine (+TS15)	Phuc	D2 - TS20 Spintronics (+TS10)	**Novosad**	D3 - SpS09 Low Dimensional Materials in Optoelectronics and Quantum Optics	**H. Li**	D4 - SpS16 Nanotechnology for Soft Electronics	**Dickey**	D5 - SpS21 Three-dimensional Nanoarchitectures and Nanocomplexes	**Gang**	D6 - SpS18 Plasma Nanotech.: Advancing Nanomaterials and Applications	**Ito**	D7 - TS11 Nanomaterials	Anjum
10:45		Andreou		Mornet		Sehgal		**Davydov**		**Y. Zhu**		**De Long**		**Shvalya**		Khosru
11:00		Zablon		Ryan		Anagnostou										Compagnini
11:15		Siconolfi		Misra		W. Liu		**Isella**		**X. Liang**		**Fomin**		**Tanaka**		Buffard
11:30				Velluto		Shreja										Ballam
11:45				Kang						**W. Wu**		**Iavarone**		**Sankaran**		Shimizu
12:00																Diolaiti
12:15																
12:30	Lunch break **Plenary Room - Salon 1-4**															
12:45																
13:00																
13:15	NSF Panel **Studio D**															
13:30																
13:45	Keynote Talks >>>				**S T Sreenivasan** **Studio B**				**Orlin Velev** **Studio E**				**Yichen Liu** **Salon 6**			
14:00																
14:15			E1 - TS10 Nanomagnetics	Buchanan	E2 - SpS12 Nanomat. for photonics	**Shevchenko**	E3 - TS01 AI for Nanotechnology	Ali	E4 - SpS16 Nanotechnology for Soft Electronics	**Yeow**	E5 - TS04 Modeling & Simulation (+TS17)	Ma	E6 - SpS22 Topological Mat. for Electronics	**Vecchioni**		
14:30				Christy		**Heiser**		Ray				Z. Chen				
14:45				Gilbert				Z. Li		**S. Wang**		Ansari		**Wang**		
15:00				Jaberolansar								Manhas				
15:15	Coffee Break + Poster Session Y															
15:30																
15:45																
16:00			F1 - TS08 Nano-Energy, Environment, and Safety (+TS11)	**Rozhkova**	F2 - SpS12 Nanomaterials for photonics: challenges for sustainability and energy management	**Serna**	F3 - SpS09 Low Dimensional Materials in Optoelectronics and Quantum Optics	**Bird**	F4 - SpS16 Nanotechnology for Soft Electronics (+TS18)	**X. Xue**	F5 - SpS21 Three-dimensional Nanoarchitectures and Nanocomplexes	**Kresin**	F6 - SpS18 Plasma Nanotech.: Advancing Nanomaterials and Applications	**Koga**	F7 - TS19 Quantum, Neuromorphic, and Unconventional Computing	Finocchio
16:15				Kou		**Chaker**		**Cummings**		**Bai**		**Boedicker**		**Cvelbar**		Chou
16:30				Ho		**Jacobsohn**		**Knoch**		**Li**		**Vaseashta**		**Keidar**		Moroshkin
16:45				Pennelli		Kawano				Yin		**Mei**		Shiratani		Saini
17:00				Di Florio						Barbosa						Mavropoulis
17:15				Cadenbach												Makasheva
17:30				D.Z. Wang												Ng
17:45																Junsangsri
18:00																
18:15																
18:30																
18:45																
19:00	Banquet - 25th Anniversary and Awards Ceremony **Plenary Room - Salon 1-4**															
22:00																

Program at a Glance: 16 July 2025

Room >	Plenary Room		Studio B		Studio D		Studio E		Salon 5		Salon 6		Salon 7	
WEDNESDAY														
16 JULY 2025														
08:00														
08:15	Plenary Talk #5 - **Paola Barbara** **Plenary Room - Salon 1-4**													
08:30														
08:45														
09:00	Plenary Talk #6 - **Tony Heinz** **Plenary Room - Salon 1-4**													
09:15														
09:30														
09:45	Coffee Break + Poster Session Z													
10:00														
10:15														
10:30			G2 - SpS15 Nanotechnologies for Neuromorphic Computing (+TS19)	**Zhen**	G3 - SpS01 Adv. in Nano-Engineered Materials for Energy Storage and Conversion	**Qiao**	G4 - SpS10 Molecular conductors: spin filtering and thermoelectric properties	**Untiedt**	G5 - SpS14 Nanopackaging for Future AI and 6G Solutions	**Bailey**	G6 - SpS16 Nanotechnology for Soft Electronics (+TS18)	**Franklin**	G7 - TS11 Nanomaterials (+SpS13)	Ericksen
10:45														Ho
11:00				**Stan**		**Zheng**		**Ardesi**		**Morris**		**Y. Zhang**		Singh
11:15														Saxena
11:30				**Parto**		**Fan**		**Mujica**		**Inoue**		**Niu**		X.-M. Xie
11:45													G7 - TS13 Nano-Optics ...	Kim
12:00				Joshi		**Kirmani**		**Wang**		**Bonyar**		Reis		E. Shao
12:15				Lombardi								Franklin		Adachi
12:30	Lunch break **Plenary Room - Salon 1-4**													
12:45														
13:00														
13:15	Student Design Competition **Prefunction Common Area**													
13:30														
13:45	Keynote Talks >>>		**Zhaoning Song** **Studio B**				**Wei Yan** **Studio E**				**Jermont Chen** **Salon 6**			
14:00														
14:15			H2 - SpS15 Nanotech. for Neurom. Comp.	**Cardwell**			H4 - TS09 Nanofabrication	Hunt	H5 - SpS14 Nanopack. for AI and 6G (+SpS04)	**Pulugurtha**	H6 - SpS16 Nanot. for Soft Electr.	**N. Lu**		
14:30								Kim						
14:45				**Gopman**				Ahsan		**Mohseni**		**L. Lu**		
15:00								L. Tao						
15:15	Coffee Break + Poster Session Z													
15:30														
15:45														
16:00	I0 - TS13 Nano-Optics, Nanophotonics, and Nano-Optoelectronics (+SpS17)	Dehzangi	I2 - SpS24 Unconventional Computing for Nanotechnology (+TS19)	**Todri-S.**	I3 - SpS19 Selected Areas in Nano-Scale Communications	**L. Zhao**	I4 - SpS02 Advancing Nanotechn.: Highlights from NTC Chapters	**Lodi**	I5 - SpS04 Chiplets: The next Frontier in Semicond. Innovation	**Pelt**	I6 - TS17 Nanosensors and Nanoactuators (+TS04+TS12+SpS21)	D. Yang	I7 - TS07 Nanoelectronics (+TS16+SpS22)	Hien
16:15		Tomioka										Chick		Verma
16:30		Intonti		**Shukla**		**D. Jing**		**K. Xu**		**Srimani**		C.-F. Lin		Sharma
16:45		Suwito										Abdulhameed		Dike
17:00		J. Feng		Kleitsiotis		**W. Yu**		**Rutckaia**		**Khalili**		Hackett		Tsipas
17:15		A. Li										Vaseashta		De
17:30		**Sun**						**E.-H. Yang**						Woloszyn
17:45														Kheirabadi
18:00	Closing													
18:15														
18:30														
18:45														
19:00														
22:00														

Conference Site Information

The main conference venue is the Renaissance Capital View Hotel which is a Marriott property located across the Potomac River from Washington, DC USA. A map of the meeting rooms at the hotel is provided here for your convenience:



General Information

IEEE-NANO is the flagship IEEE International Conference on Nanotechnology, which has been a successful annual conference since 2001. The conference scope spans both ***nanoscience*** and ***nanotechnology***, including:

- Developing new nanomaterials or manipulating matter at nanometre length scale
- Studying the fundamental physical, chemical or biological properties of these nanomaterials and nanostructures
- Manipulating and optimizing nanomaterials and nanostructures to create new nanosensors, nanoactuators and nanoelectronic/nanophotonic devices.

Contributions from academic, governmental, research institute and industry-based researchers are all represented in IEEE-NANO.

Technical Areas

IEEE-NANO 2025 submissions cover the following technical areas:

- Energy Conversion: Thermoelectrics and Solar Technologies
- Energy Storage
- Nanosensors and Nanoactuators
- Nanoplasmonics
- Nanoscale Science: Characterization and Modeling
- Nanophotonics
- Nanomaterials
- Nanofabrication and Quantum Engineering
- Nanomedicine
- Nanotools
- Nanoelectronics
- Nanobio
- Nanopackaging
- Stretchable and Wearable Electronics
- 2D Materials
- Nanotechnology for Humanitarian and Peace Engineering:
- Sustainable Electronics: Disassembling, Recycling and Eco-Design
- Nano-acoustics
- Nano-Ferroics

Plenary Speakers

Plenary Talk #1 - Monday, 14 July 2025, 8:15-9:00 am

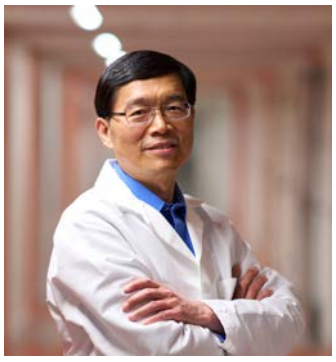
Prof. Lihong Wang California Institute of Technology, Pasadena, California, USA

Photoacoustic, Light-Speed, and Quantum Imaging

Abstract

We developed photoacoustic tomography (PAT) to peer deep into biological tissue. PAT offers in vivo functional, metabolic, molecular, and histologic imaging across scales from organelles to entire organisms. Additionally, we developed light-speed compressed ultrafast photography (CUP) to record 219 trillion frames per second, vastly surpassing commercially available camera technologies. CUP can capture real-time images of the fastest phenomena in nature, such as light propagation, and can be slowed down to record slower events like neural conduction. We are also exploring quantum entanglement for imaging. PAT physically combines optical and ultrasonic waves. Conventional high-resolution optical imaging of scattering tissue is limited to depths within the optical diffusion limit (~1 mm). PAT overcomes this limit, providing centimeter-scale deep penetration with high ultrasonic resolution and high optical contrast by sensing molecules. Its broad applications include early cancer detection and brain imaging. The annual conference on PAT has become the largest in SPIE's 20,000-attendee Photonics West since 2010. CUP, with a single exposure, can image transient events occurring on a time scale down to tens of femtoseconds. Like traditional photography, CUP is receive-only, avoiding the need for specialized active illumination required by other single-shot ultrafast imagers. CUP can be coupled with front optics ranging from microscopes to telescopes, enabling widespread applications in both fundamental and applied sciences, from biology to cosmophysics. Quantum imaging with the Heisenberg scaling improves spatial resolution linearly with the number of quanta, surpassing the square-root improvement of the standard quantum scaling.

Biography



Lihong Wang edited the first book on photoacoustic tomography. His book entitled "Biomedical Optics: Principles and Imaging," one of the first textbooks in the field, won the 2010 Joseph W. Goodman Book Writing Award. He has published 600 peer-reviewed journal articles and delivered 610 keynote/plenary/invited talks. His Google Scholar h-index and citations have reached 159 and 109K. His laboratory was the first to report functional photoacoustic tomography, 3D photoacoustic microscopy, photoacoustic endoscopy, photoacoustic reporter gene imaging, the universal photoacoustic reconstruction algorithm, and CUP (world's fastest camera). He chairs the annual conference on Photons plus Ultrasound, the largest conference at Photonics West. He was the Editor-in-Chief of the Journal of Biomedical Optics. He received the NIH Director's Pioneer, NIH Director's Transformative Research, and NIH/NCI Outstanding Investigator awards. He also received the OSA C.E.K. Mees Medal, IEEE Technical Achievement Award, IEEE Biomedical Engineering Award, SPIE Britton Chance Biomedical Optics Award, IPPA Senior Prize, and OSA Michael S. Feld Biophotonics Award. He is a Fellow of the AAAS, AIMBE, Electromagnetics Academy, IAMBE, IEEE, NAI, OSA, and SPIE as well as a Foreign Fellow of COS. An honorary doctorate was conferred on him by Lund University, Sweden. He was inducted into the National Academy of Engineering.

Plenary Speakers

Plenary Talk #2 - Monday, 14 July 2025, 9:00-9:45 am

Prof. Osvaldo Oliveira University of Sao Paulo, Sao Paulo, Brazil

Machine Learning for Data Analysis and Beyond: The two-way connection with Nanotechnology

Abstract

Machine learning (ML) has been transformative in driving scientific and technological innovation, with applications spanning data analysis, predictive modeling, and optimization. Simultaneously, nanotechnology facilitates the creation of nanoscale devices and systems. These are crucial for enabling ML, particularly deep learning, by providing hardware that can meet its demanding computational requirements. This lecture explores the synergistic, two-way connection between ML and nanotechnology, presenting examples and prospects for further advancements. On one hand, ML methods are valuable for nanotechnology. They can analyze complex datasets, accelerate material discovery, and optimize nanoscale systems. Case studies will illustrate how supervised learning approaches have been applied to sensing and biosensing data, specifically in clinical diagnosis and environmental or health monitoring. Of particular interest is the integration of image analysis with ML in these applications, which holds the potential to yield almost instrument-free detection methods. On the other hand, nanotechnology is crucial for neuromorphic computing, quantum processors, and energy-efficient nanoscale transistors. This reciprocal relationship between ML (and artificial intelligence) and nanotechnology is expected to accelerate advances toward machines capable of autonomously generating knowledge. This exciting yet potentially concerning development will reshape science, technology, and society as a whole – topics to be discussed in this lecture.

Biography

Osvaldo N. Oliveira Jr. is the director of the Sao Carlos Institute of Physics, University of Sao Paulo, Brazil, President of the International Union of Materials Research Societies (IUMRS), a member of the Brazilian Academy of Sciences, and executive editor of ACS Applied Materials & Interfaces. He received his PhD from University of Wales, Bangor (1990), and in 2019 was awarded the Doctor Honoris Causa degree from the Federal University of Mato Grosso do Sul, Brazil. He published ca. 690 papers in refereed journals, which received ca. 20,300 citations (h = 63) in the Web of Science, and 30,400 citations (h = 81) in Google Scholar, in June, 2024, filed 12 patents, and supervised 53 MSc and PhD students. In recent years, Prof. Oliveira has pioneered the combined use of methods from distinct fields of science, with the merge of methods of statistical physics and computer science to process text, and use of information visualization to enhance the performance of sensing and biosensing. In 2006 he was awarded the Scopus Prize, given to 16 Brazilian researchers considered the most productive in terms of papers published and citations.

Plenary Speakers

Plenary Talk #3 - Tuesday, 15 July 2025, 8:15-9:00 am

Prof. Yu Sun University of Toronto, Toronto, Ontario, Canada

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.

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, and an International Member of the Chinese Academy of Engineering. He was also 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.

Plenary Speakers

Plenary Talk #4 - Tuesday, 15 July 2025, 9:00-9:45 am

Prof. Stella Pang City University of Hong Kong, Hong Kong, China

Nanotechnology for Biosensors and Meta Devices

Abstract

Innovative nanostructure designs are essential for creating high-performance biosensors, high-frequency devices, and meta devices. The production of these nanostructures and their components requires nanotechnology that ensures rapid, consistent, and reproducible results. We have pioneered unique nanoimprint technology to fabricate three-dimensional (3D) nanodevices with multiple layers and specialized functions, achieving high speed, high uniformity, and precise dimensional control over large areas. By manipulating the surface energy of stamps and imprinted materials, both direct and reversal nanoimprinting are feasible. This presentation will showcase 3D biomimetic platforms and plasmonic biosensors that offer high sensitivity in controlling and monitoring cells and biomolecules. Nanostructured platforms are employed to influence cell migration and differentiate cancer cells from healthy ones. Additionally, high-frequency terahertz lenses and antennas with multiple-beam control capabilities will be demonstrated using curved or meta-surfaces. Moreover, nanoimprinted metasurfaces will be used to create twisted layers, realizing chiral magic angles for advanced light manipulation.

Biography

Stella W. Pang serves as a Chair Professor and the Director of the Center for Biosystems, Neuroscience, and Nanotechnology in the Department of Electrical Engineering at City University of Hong Kong, China. She has published over 400 technical articles, book chapters, and invited presentations. Prof. Pang holds 13 patents in nanotechnology and microsystems, with two more pending. Her research focuses on nanofabrication technologies for biomedical applications, microelectromechanical systems, terahertz devices, and meta devices. Additionally, she has delivered 35 short courses in these areas. Prof. Pang is a Fellow of IEEE, ECS, AVS, HKIE, and HKAE.

Plenary Speakers

Plenary Talk #5 - Wednesday, 16 July 2025, 8:15-9:00 am

Prof. Paola Barbara Georgetown University, Washington, DC, USA

Scalable sensing platforms based on two-dimensional materials: Focus on epitaxial graphene on SiC

Abstract

The successful isolation of monolayer graphene twenty years ago stimulated intense interest worldwide in the extraordinary properties of graphene and other atomically thin materials and their suitability for electronic and sensing applications. This research was facilitated by the relatively easy synthesis based on the mechanical exfoliation process. However, the lack of scalability of this technique makes it difficult to transition discoveries from the lab to viable applications, underscoring the importance of developing scalable synthesis techniques for high-quality, large-area materials. Epitaxial growth of graphene on SiC indeed provides wafer-scale, high-quality graphene, but electronic applications have been a challenge due to its high electron doping and the difficulty to fabricate a gate to control the carrier density. Here, I will discuss our approaches to overcome these challenges and use epitaxial graphene on SiC as a promising scalable platform with two examples: 1) the fabrication of gated devices for Floquet engineering of graphene, to drive graphene into non-equilibrium topological states by light irradiation and 2) the fabrication of graphene quantum dots for molecular spintronics devices, yielding an electrical read-out of the magnetic state of single molecule magnets.

Biography

Paola Barbara is a physics professor and current physics department chair at Georgetown University in Washington, DC, USA. She is also an editor for the journal Carbon. Her research interests include quantum transport and superconductivity, as well as novel nanoscale devices based on atomically thin materials, ranging from chemical sensors to detectors and sources of electromagnetic radiation. She received her M. S. degree (Laurea in Fisica) at the University of Salerno, Italy, and her Ph. D. in Physics at the Technical University of Denmark, in Lyngby, Denmark. Prior to joining the faculty at Georgetown University in 2000, she worked at the Center for Superconductivity Research (now Quantum Materials Center) at the University of Maryland.

Plenary Speakers

Plenary Talk #6 - Wednesday, 16 July 2025, 9:00-9:45 am

Prof. Tony Heinz Stanford University, Stanford, California, USA

Title TBA

Abstract

TBA

Biography

Tony Heinz is a Professor of Applied Physics and Photon Science at Stanford University, with a courtesy appointment in Electrical Engineering and a joint affiliation with SLAC National Accelerator Laboratory. Heinz received a BS degree in Physics from Stanford University in 1978 and a PhD degree, also in Physics, from the University of California at Berkeley in 1982. Heinz was subsequently at the IBM Research Division in Yorktown Heights, NY until joining Columbia University in 1995 as a Professor of Electrical Engineering and Physics. At Columbia, he served as a Scientific Director of the Columbia Nanoscale Science and Engineering Center (NSEC) and of the Energy Frontier Research Center (EFRC). He was also the President of Optica in 2012. Heinz joined Stanford University in 2015, also serving as the Director of the Chemical Sciences Division at SLAC from that time until 2019. From 2017 to 2022, he was the Associate Laboratory Director for Energy Sciences at SLAC. Heinz is known for his research into the properties and dynamics of nanoscale materials, particularly 2D materials, through the creative use of optical and laser-based techniques. He is a Fellow of several professional societies, including the IEEE, as well as the US National Academy of Sciences.

Special Event: 13 July 2025, 8:30 am-5:30 pm

Nanotechnology Youth Day

Presenters

Bonnie Gray: Simon Fraser University, CANADA
Eleonore Vissol-Gaudin: Nanyang Technical University, SINGAPORE
Amit Ranjan Trivedi: University of Illinois – Chicago, USA
Attila Bonyar: Budapest University, HUNGARY
Gina Adam: George Washington University, USA
Gerhard Klimeck: Purdue University, USA
Murty Polavarapu: Virginia Microelectronics Consortium, USA
Jackie Sharp: Johns Hopkins Applied Physics Laboratory, USA
Sanjukta Bhanja: University of South Florida, USA

Event Date, Time, Location

13 July 2025, 8:30 am-5:30 pm, Johns Hopkins Bloomberg Center, 10th Floor

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.

Organizers

Rafal Sliz: University of Oulu, FINLAND
Matteo Bruno Lodi: University of Cagliari, ITALY
Sanjukta Bhanja: University of South Florida, USA
Ethan Ahn (Co-Chair): George Mason University, USA

Special Event: 15 July 2025, 12:30-1:30 pm

NSF Career Development Panel

Event Date, Time, Location

15 July 2025, 12:30-1:30 pm, Renaissance Studio D

Event Description

This panel will focus on issues that young professionals in nanotechnology face when they start their careers. The panelists will provide their perspectives on these issues and share their own experiences. All are welcome to attend this event.

Panelists

Michael Dickey received a BS in Chemical Engineering from Georgia Institute of Technology (1999) and a PhD from the University of Texas (2006) under the guidance of Professor Grant Willson. From 2006-2008 he was a post-doctoral fellow in the lab of Professor George Whitesides at Harvard University. He is currently the Camille and Henry Dreyfus Professor in the Department of Chemical & Biomolecular Engineering at NC State University. He completed a sabbatical at Microsoft in 2016 and EPFL in 2023. Michael's research interests include soft matter (liquid metals, gels, polymers) for soft and stretchable devices (electronics, energy harvesters, textiles, and soft robotics).

Kremena Makasheva is Director of Research at CNRS, Laboratory on Plasma and Conversion of Energy (LAPLACE), Toulouse, France. She obtained a Ph.D. degree on Plasma Physics from Sofia University, Bulgaria in 2002, for her work on surface wave sustained plasmas. Currently her research focuses on reactive plasmas, design, synthesis and characterization of nanostructures for biomedical, optical, electrical engineering and space applications. Multifunctionality of silver nanoparticles (AgNPs) is in the heart of her research. Kremena serves IEEE Nanotechnology Council (IEEE NTC) with different actions. She was IEEE NTC Vice-President for Technical Activities (2020-2021), then she served as IEEE NTC Vice-President for Conferences (2023-2024). She is founding Chair of the IEEE NTC Mentoring program – MENED. Currently she is President-elect of IEEE NTC.

Rafal Sliz is a tenured Associate Professor at the Optoelectronics and Measurement Techniques Unit (OPEM) of the University of Oulu, Finland. His research expertise lies in nanotechnology, focusing on printed electronics and sustainable energy storage systems. Rafal pursued his M.Sc. and Ph.D. at the University of Oulu, where he conducted pioneering research in wireless sensor networks and printed electronics at the OPEM. Throughout his academic career, Rafal has received numerous grants and awards, enabling him to conduct research visits abroad, including the Flexible Display Center at Arizona State University (USA), the London Centre for Nanotechnology at UCL (UK), and a postdoctoral fellowship at the Sargent Group, University of Toronto (Canada). In November 2024, Rafal has been appointed as a visiting professor at ASU (USA), in the Hwa Group. Rafal is actively engaged in IEEE activities at multiple levels, with a particular focus on nanotechnology, education, and awards.

Moderator

Yong Zhu received his BS degree from the University of Science and Technology of China (1999) and PhD degree (2005) from Northwestern University. After completing his postdoctoral training at the University of Texas at Austin, he joined the faculty of North Carolina State University in 2007, where he is currently the Andrew Adams Distinguished Professor in the Department of Mechanical and Aerospace Engineering. His group conducts research at the intersection of mechanics of materials and micro/nano-engineering, including nanomaterial-enabled soft electronics and soft robotics. His work has been recognized with many awards from organizations including ASME, Alexander von Humboldt Foundation, Sigma Xi, Society of Engineering Science, and IDTechEx Wearable USA.

Organizers

Yong Zhu: North Carolina State University, USA
Orlin Velev: North Carolina State University, USA
Amay Bandodkar: North Carolina State University, USA
Jong Eun Ryu: North Carolina State University, USA
Xiaoning Jiang: North Carolina State University, USA

Special Event: 15 July 2025, 7 pm

IEEE-NANO 25th Anniversary Presentations

Presenters

Cary Yang: Santa Clara University, USA
James Morris: Portland State University, USA

Event Date, Time, Location

15 July 2025, 7 pm, Renaissance Ballroom, Conference Dinner

Event Description

The IEEE International Conference on Nanotechnology (IEEE-NANO) is the flagship conference of the IEEE Nanotechnology Council (NTC) and is celebrating its 25th anniversary this year. Since its inception, IEEE-NANO has provided a rich and integrative environment for scientists to have an opportunity to engage and establish networks with other professionals in their field. The conference is not just an opportunity to showcase creative research, it is the place for scientists to direct feedback on their work and form collaborative interactions. All aspects of nanotechnology are covered by the conference including electronics, computing, materials, photonics, magnetic, acoustics, sensors, robotics, and biomedical applications. During this event, Profs. Yang and Morris will provide personal reflections on the evolution of nanotechnology and the role that IEEE-NANO has played over the past 25 years in serving the IEEE and its members.

Organizers

Shanshan Liu: University of Electronic Science and Technology of China, CHINA
Xiaoning Jiang: North Carolina State University, USA
Clifford Lau: Institute for Defense Analyses, USA
Jin-Woo Kim: University of Arkansas, USA
Kremena Makasheva: CNRS, University of Toulouse, FRANCE
James Spicer: Johns Hopkins University, USA

Special Event: 15 July 2025, 7 pm

Conference Banquet: IEEE NTC Awards Ceremony and Announcement of IEEE-NANO 2026

Event Date, Time, Location

15 July 2025, 7 pm, Renaissance Ballroom

Event Description

IEEE Nanotechnology Awards Presentations:

IEEE Nanotechnology Council Pioneer Awards: 2024 - Tony F. Heinz; 2025 - Yu Sun

IEEE Nanotechnology Council Distinguished Service Award: 2025 - Tommy Tzeng

Invitation to IEEE-NANO 2026: Ningmu Zou

Special Event: 16 July 2025, 12:30-1:30 pm

Nanotechnology Student Design Competition

Event Date, Time, Location

16 July 2025, 12:30-1:30 pm, Renaissance Prefunction (Common) Space

Event Description

The Nanotechnology Student Design Competition (https://ieeenano.org/2024/2nd-edition-of-the-ieee-nano-student-design-competition-nano-sdc) will have teams of students solve specific problems using nanotechnology concepts and present them to NANO conference attendees. Their projects will be judged and winners will have an opportunity to publish their work in the *IEEE Nanotechnology Magazine*.

Organizer

Matteo Bruno Lodi: University of Cagliari, ITALY

Special Event: 17 July 2025, 8:30 am-4:00 pm

IEEE Region 9 Tutorial Day

Event Date, Time, Location

17 July 2025, 8:30 am-4:00 pm, Online and Johns Hopkins Bloomberg Center

Event Description

Continuing the initiative under the motto *"An Extended Bridge to Latin America"* and as part of the conference activities related to the celebration of the 25th anniversary of IEEE-NANO, the organizing committee has planned a series of outreach activities dedicated to young professionals and researchers from Latin America (IEEE Region 9 or R9).

In this regard a R9 Tutorial Day is scheduled for July 17th. This event features four invited tutorial talks given by speakers originally from Region 9, covering special topics in Nanotechnology and Nanosciences. The R9 Tutorial Day will be held remotely, in a virtual environment, alongside regular conference activities in Washington D.C. Participation is completely free of charge, with only a simple free pre-registration required at the conference website.

Presenters

Christiano Jose Santiago de Matos, University Mackenzie, Brazil, https://scholar.google.com.br/citations?user=mco0TzgAAAAJ&hl. "2D Materials and Their Application to Optoelectronics and Photonics"

Marcelo Pavanello, IEEE ED-S Distinguished Lecturer, Centro Universitario FEI, Brazil, https://scholar.google.com.br/citations?user=2iRk15MAAAAJ&hl=en. "Operation of Planar and Multigate Fully Depleted SOI MOSFETs in Deep Cryogenic Environments for Quantum Computing Applications"

Monica Garcia, L'Oréal UNESCO 2023 award recipient, National University of Cordoba (UNC), Argentina https://scholar.google.com.br/citations?hl=en&user=CkFSDKMAAAAJ "Next-Gen Therapeutics: Harnessing Nanotechnology for Better Health"

Rodrigo B. Capaz, Director, Brazilian Nanotechnology National Laboratory, Federal University of Rio de Janeiro (UFRJ), Brazil, https://scholar.google.com.br/citations?user=2HZbMZsAAAAJ&hl. "Research Opportunities at the Brazilian Nanotechnology National Laboratory (LNNano)"

Organizer

Murilo A. Romero, University of Sao Paulo, BRAZIL

Access to Nearby Sites of Interest

Washington, DC: The best way to get to museums and attractions in Washington, DC is to take the Metro rail system (subway). The Renaissance Capital View has a shuttle that runs every 30 minutes and will take guests to the Crystal City Metro Station (complimentary and courteous shuttle service to Crystal City Metro station and Ronald Reagan Washington National Airport (DCA); Hours: 5 am – 11 pm daily). Also, you can walk to the station from the hotel – this will take approximately 15 minutes.

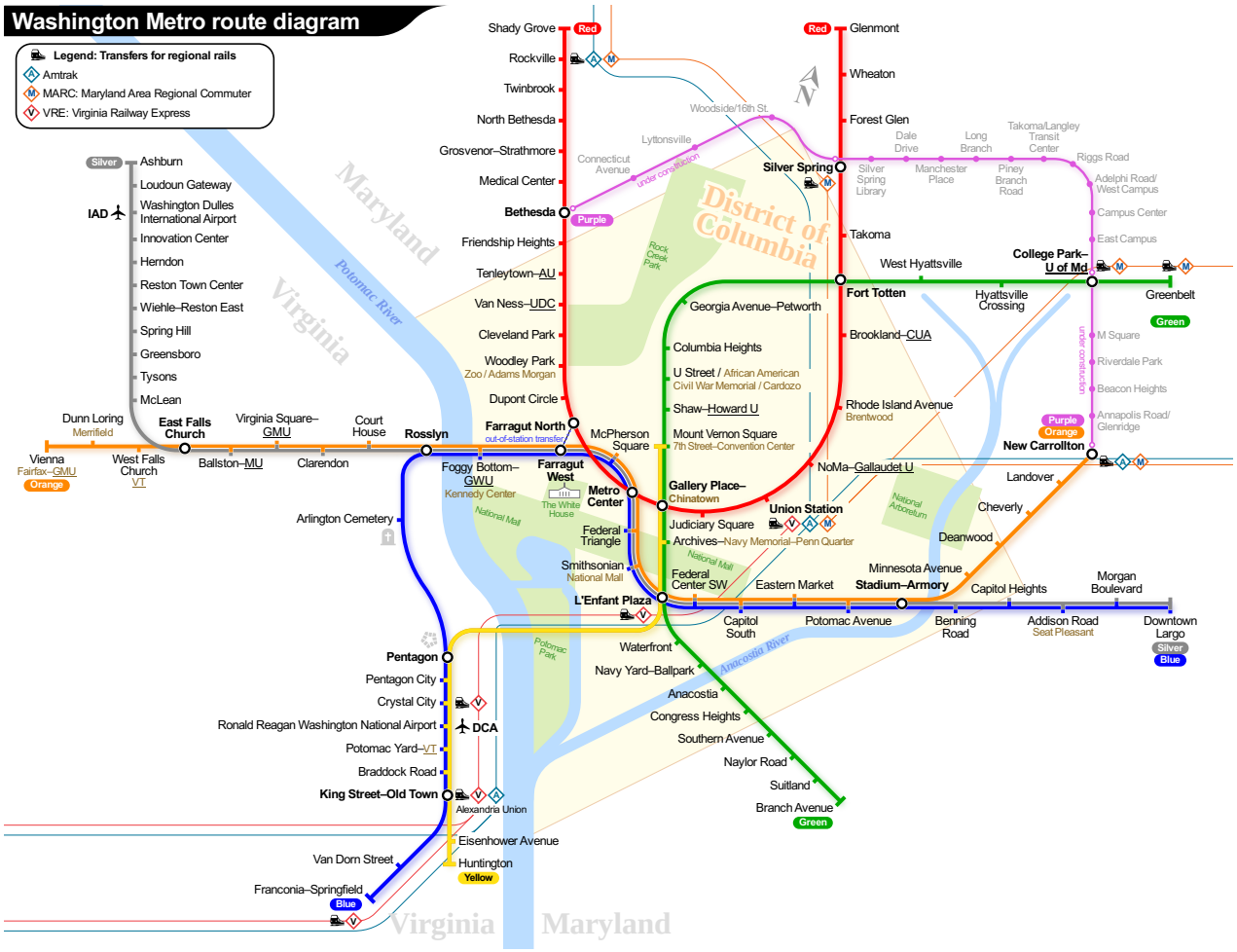
At the Crystal City METRO Station, board the Yellow Line (going towards Mt. Vernon Square) and debark at the Archives Navy Memorial-Penn Quarter Station (Green and Yellow Lines) which is near the East and West Wings of the National Galleries of Art. You can use a credit card to ride the METRO, but you can also purchase a METRO card (which can be obtained from machines at METRO Stations) or you can use the METRO app on your phone (https://www.wmata.com/fares/MobilePay/SmarTrip-App.cfm). Fares should be a few USD each way.

To return to the hotel, you should get on the Yellow Line (going towards Huntington) and debark at Crystal City where you can catch the hotel shuttle or walk back to the hotel.

Alexandria, Virginia: For a quieter experience, you can visit Old Town Alexandria. The best way to get to shops and attractions in Alexandria is to take the Metro rail system (subway). The Renaissance Capital View has a shuttle that runs every 30 minutes and will take guests to the Crystal City Metro Station (complimentary and courteous shuttle service to Crystal City Metro station and Ronald Reagan Washington National Airport (DCA); Hours: 5 am – 11 pm daily). Also, you can walk to the station from the hotel – this will take approximately 15 minutes.

At the Crystal City Metro Station, board the Blue Line (going towards Franconia-Springfield) and debark at the King Street-Old Town Station (Blue and Yellow Lines) which is near sites in Old Town Alexandria.

Other Sites: For those interested in accessing other sites in the Washington DC area, the Metro is a convenient way to reach many locations. A map of the Metro system is provided to help guide your travels!



Other Information

Medical: For attendees who find they need access to medical attention, a drop-in clinic is located a few minutes from the conference venue. Information about the provider can be accessed using this website: https://novapatientcare.com/locations/crystal-city-arlington-va/. It is open 9 am – 6 pm Monday-Saturday. The telephone number is (703) 940-1414 and it is located at 3535 South Ball Suite A Arlington, VA 22202.

Printing and Shipping Services: For attendees who need printing or shipping services, a FedEx Print and Ship shop is located a few minutes from the conference venue at 2110 Crystal Dr**,** Suite B**,** Arlington, Virginia 22202. See https://maps.google.com/maps?cid=16914354734613704525 for information about this site.