CURRICULUM VITAE
CHANG-YONG NAM

Senior Scientist (Research Staff 6, Materials)
Group Leader – Electronic Nanomaterials
Center for Functional Nanomaterials (CFN)
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Education

Ph.D.	University of Pennsylvania	Philadelphia, PA	Materials Science and Engineering	2002 – 2007
M.S.	Korea Adv. Inst. Sci. Tech. (KAIST)	Daejon, South Korea	Materials Science and Engineering	1999 – 2001
B.E.	Korea University	Seoul, South Korea	Metallurgical Engineering	1993 – 1999
		(Leave of Absence, Military Service in Republic of Korea Army,		1995 – 1997)

Appointments

2025 – p	Group Leader, Electronic Nanomaterials	Center for Functional Nanomaterials, Brookhaven National Laboratory
2019 – p	Senior Scientist w/ continuing appoint.	Center for Functional Nanomaterials, Brookhaven National Laboratory
2016 – 2019	Scientist	Center for Functional Nanomaterials, Brookhaven National Laboratory
2013 – 2016	Associate Scientist	Center for Functional Nanomaterials, Brookhaven National Laboratory
2010 – 2013	Assistant Scientist	Center for Functional Nanomaterials, Brookhaven National Laboratory
2007 – 2010	Goldhaber Distinguished Fellow	Center for Functional Nanomaterials, Brookhaven National Laboratory
2023 – p	Adjunct Professor	Dept. Materials Sci. & Engineering, University of Texas at Dallas
2014 – p	Adjunct Professor	Dept. Materials Sci. & Chem. Engineering, Stony Brook University
2019 – 2022	Adjunct Professor	Dept. Electrical & Computer Engineering, New Jersey Institute of Tech.
2001 – 2002	Commissioned Researcher	Materials Research Div., Korea Institute of Science and Technology (KIST)
2001 Spring	Visiting Research Assistant	Brown University, Division of Engineering

Awards/Distinctions

2024	Brookhaven Science and Technology Award	Brookhaven National Laboratory
2024	Brookhaven's Top 10 Discoveries of 2024	Brookhaven National Laboratory
2023	Lead PI, DOE Accelerate Initiative Award	U.S. Department of Energy (DOE)
2022	Battelle Inventor of the Year	Battelle Memorial Institute / Brookhaven National Lab.
2021	Top-10 Areas of Amazing Science at Brookhaven Lab	Brookhaven National Laboratory
2021	Winner, 2021 DOE National Labs Accelerator Pitch Event	Lawrence Livermore National Lab. / U.C. Davis
2020	Create the Future 2020 Design Contest Top-100 Entry	Tech Briefs
2022, 2018, 2011	Spotlight Award	Brookhaven National Laboratory
2007 – 2010	Goldhaber Distinguished Fellowship	Brookhaven National Laboratory
2003	Passed Ph.D. Qualifying Exam with Distinction	University of Pennsylvania, Dept. Mater. Sci. Eng.
2002 – 2007	Graduate Research Fellowship	University of Pennsylvania, Dept. Mater. Sci. Eng.
2001	Brain Korea 21 Financial Award for Abroad Research	Korea Advanced Institute of Science and Technology
1999 – 2001	Korean Government Scholarship	Korea Advanced Institute of Science and Technology
1999	Merit-based Scholarship	Korea University

Research Synopsis

- Development and application of atomic layer processing (ALP) encompassing atomic layer deposition (ALD), ALD derived techniques (e.g., vapor-phase infiltration (VPI)/sequential infiltration synthesis (SIS)), and atomic layer etching (ALE) towards microelectronics, especially extreme ultraviolet (EUV) lithography and 3D integration
- Development and application of ALD techniques, including VPI/SIS towards energy technology applications including membranes and catalysis
- Device physics and materials processing in organic/hybrid semiconductors, semiconductor nanowires, and two-dimensional materials, especially neuromorphic materials/devices and novel transistors
- Application of self-assembled block copolymer thin films for novel patterning

Research Support and Grant Activities

Current

Lead PI, U.S. Department of Energy (DOE), Office of Science, Accelerate Initiative Project, "Angstrom Era Semiconductor Patterning Material Development Accelerator", 9/1/2023 – 8/31/2027 (total $8M, leading a research team consisting of BNL, LBNL, Stanford U., UT Dallas, and U. Mississippi; $5M BNL portion)

PI, BNL, Laboratory Directed Research and Development (LDRD) Type-A Project, "Co-Design of Advanced Interference EUV Lithography Capability for Next-Generation Semiconductor Chip Manufacturing", 10/1/2024 – 9/30/2027 (total $1.8M, $600k PI portion)

PI, Samsung Electronics, Collaborative Research Funding, "Development of VPI Process for High-NA EUV C/H CD Shrinkage and CDU Improvement", 10/1/2024 – 9/30/2027 ($300k)

Team Member, U.S. DOE, Office of Science, Funding for the CFN, BNL, Contract No. DE-SC0012704 (~$25M/yr, continuous annual renewal).

Co-PI, DOE Microelectronics Science and Research Center (MSRC), "Nano-Scale Research Center for Heterogeneous Integration Platforms (NSR-CHIP)", 1/1/2025 – 9/31/2028 ($1.5M co-PI portion out of $12M)

Co-PI, BNL, LDRD Type-A Project," AI-Circuit-Materials Co-Design for Mitigating Memristive Stochasticity", 10/1/2024 – 9/30/2027 ($600k co-PI portion out of total $1.8M)

Co-PI, Republic of Korea, Ministry of Trade, Industry and Energy (MoTIE), "Routing Design Guided Development of 3D Scaling BEOL Interconnect Technology", 4/1/2023 – 12/31/2027 (~$360k co-PI portion out of ~$2.3M)

Co-PI, NSF MRI (Major Research Instrumentation) Program, "Equipment: MRI: Track 2 Acquisition of an Extreme Ultraviolet (EUV) Resist Flood Exposure Tool", 9/1/2025 – 8/31/2028 ($3.54M)

Co-PI, BNL, LDRD Type-A project, "Exocortex for Microelectronics", 10/1/2026 – 9/30/2029 ($1.2M)

Co-PI, BNL, LDRD Type-A Project, "Development of Holistic and Scalable Solutions to Microelectronics Metrology Challenges", 10/1/2023 – 9/30/2026 ($1.2M)

Past

PI, BNL, LDRD Type-C, "X-ray Critical Dimension Analysis of Lithographic Patterns for Next-Generation Microelectronics", 4/1/2025 – 9/30/2025 ($100k)

Co-PI, Quantum Information Science and Research Infrastructure Funding, DOE, "Quantum Materials: Integrated Multimodal Characterization and Processing (QM-IMCP)", 10/01/2021 – 9/30/2025 (~$1M co-PI portion out of $6.2M)

Co-PI, Republic of Korea, MoTIE, "Development of Mass Production Technology and Systems for Boron Nitride Nanotubes used for Space Engineering", 04/01/2022 – 12/31/2025 ($1.8M)

PI, BNL, LDRD Type-B Project, "Beyond CMOS Memristor Integration for Energy-Efficient Computing", 10/1/2023 – 9/30/2025 ($400k)

Co-PI, Semiconductor Research Corporation (SRC) Grant, "Novel Organic-Inorganic Hybrid EUV Dry Resists Deposited by Molecular Atomic Layer Deposition (MALD)", 01/01/2021 – 12/31/2023 ($112K co-PI portion out of total $300K)

PI, Technology Maturation Funding, BNL, "VIPP: Vapor-Infiltration Photoresist Process", 10/01/2021 – 6/30/2023 ($50k)

Co-PI, U.S. DOE, Office of Energy Efficiency & Renewable Energy (EERE), Hydrogen and Fuel Cell R&D Grant, Contract No. DE-EE0008423 "Electrolyzer Integrated Modular Nano-Array Monolithic Catalytic Reactors for Low Pressure/Temperature and High Flux Synthetic Fuel Production", 10/01/2018 – 6/30/2022 ($170K co-PI portion out of total $2M)

PI, CFN Intra-Department Grant, BNL, "Application of Vapor-Phase Materials Infiltration in Polymer Templates", 09/01/2018 – 05/31/2022 (~$300K)

PI, CFN Intra-Department Grant, BNL, "High-Performance Greenhouse Gas Sensing Architecture Based on Metal Oxide Nanostructures Derived from Polymer Nanotemplates", 03/01/2018 – 09/28/2021 (~$450K)

PI, BNL LDRD Grant for COVID-19, "Engineered Substrates for 3D Molecular-Imprint-Based Early COVID-19 POC Detection", 08/01/2020 – 01/31/2021 ($36K)

PI, CFN Director's Research Funding, BNL, "Utilization of Resonant Energy Transfer in Ultrathin Si Solar Cells", 2012 – 2014 ($300K).

Team Member, Global Research Laboratory (GRL) Grant, National Research Foundation of Korea, "Development of Flexible and Printed Perovskite/Organic Integrated Photovoltaic Modules with Ultrahigh Efficiency, Long-Term Stability and Large-Area Reproducibility", 06/01/2017 – 02/28/2020 ($2.48M)

CFN User Program

Objectives

- Managing the Electronic Nanomaterials (ENM) group, which conducts fundamental research in semiconductor materials processing, novel devices & physics, and advanced patterning for next-generation microelectronics. Key focus areas include ALP—encompassing ALD and ALE—as well as neuromorphic and low-dimensional materials & devices, and novel resist materials for EUV lithography and beyond. The group manages CFN's Nanofabrication Facility (a 5,000 sq. ft. cleanroom) along with aspects of the Materials Synthesis and Characterization Facility, which public users can access through the CFN User Program
- Providing scientific and technical expertise, and developing collaborative research projects on the following targeted subject areas: (a) Materials processing and device physics in organic/hybrid semiconductors, nanowires, and two-dimensional materials (particularly toward optoelectronic and photovoltaic device applications); (b) Application of ALD techniques, including VPI/SIS, for microelectronics, hybrid nanocomposites, membranes, nanopatterning, and catalysis
- User proposal administration: Proposal feasibility review, reviewer assignment, and resource allocation for parts of Materials Synthesis and Characterization Facility

Scientific Facility Development

(a) CFN Interference EUVL Partner User End-Station, 2024 – p; (b) Modular autonomous experimental system, 2024 – p; (c) Plasma-enhanced ALE system, 2021 – p; (b) Thermal ALD system, 2021; (c) Scanning photocurrent microscopy (SPCM) system, 2017; (d) ALD system tailored to infiltrations synthesis, 2016; (e) Photoelectrochemical (PEC) water splitting characterization facility, 2012; (f) Organic photovoltaic device fabrication and optoelectronic characterization facility, 2010

Committee Service

CFN Microelectronics Representative to BNL EPS (Energy & Photon Science) Directorate (2019 – p); CFN NSRC Representative for Microelectronics Working Group (2021 – 2025); CFN Summer Sunday Organizer, Chair (2021) and co-Chair (2020); CFN Colloquium Committee Member and Chair, 2017 – 2023; Research and Technical Staff hiring and promotion review committee, 2012 – p; Plasma-enhanced ALD system procurement/technical evaluation committee, 2017 – 2018

Research Advisors

Postdoctoral: Charles T. Black (BNL)
Ph.D.: John (Jack) E. Fischer (University of Pennsylvania, deceased)
M.S.: Dang-Moon Wee (Korea Advanced Institute of Science and Technology)

Research Collaborators (Past 5 Years)

S. Bent (Stanford U.), B. Chaplin (U. Illinois, Chicago), M. Cotlet (BNL), M. Connolly (LBNL), Y. Chu (BNL), G. Doerk (BNL), Y.F. Ding (U. Colorado), M. Eller (Cal. State U. Northridge), P.X. Gao (U. Conn.), D. Hwang (Stony Brook U.), K.S. Hwang (Kyung Hee Univ.), J. Kim (UT Dallas), S. Kim (U. Illinois Chicago), J. Kline (NIST), O. Kostco (LBNL), S.-W. Lee (U. Conn.), H. Lin (U. Buffalo), M.Z. Liu (BNL), J.H. Moon (Sogang Univ.), D. Nykypanchuk (BNL), X. Qu (BNL), M.H. Rafailovich (Stony Brook U.), C. Ross (MIT), R. Ruiz (LBNL), J. Sadowski (BNL), E. Stavitski (BNL), C. Wang (LBNL), K. Yager (BNL), J.K. Yoo (LANL), S. Yoo (BNL), F.Y. Zhang (U. Tennessee, Knoxville)

Invited Seminars and Talks

173. Stony Brook University, Department of Materials Science and Chemical Engineering, Oct. 2026, Stony Brook NY, Invited Lecture, Title: "Atomic layer deposition approaches for future extremely scaled microelectronic devices"
172. Materials Science & Technology (MS&T) 2026, Oct. 2026, Pittsburgh PA, Invited Talk, Title: "Phase and Stoichiometry Engineered Synaptic TaOx Memristors"
171. Blue-X Technical Working Group (TWG) Quarterly All Sub-TWGs Update Meeting, Sept. 2026, online, Invited Talk, Title: "3.1 nm Beyond EUV Interference Lithography Capability Plan at Brookhaven National Lab"
170. NSR-CHIP Annual Meeting 2026, Sept. 2026, Oak Ridge TN (online), Invited Talk, Title: "Phase and stoichiometry engineered synaptic TaOx memristors"
169. NSR-CHIP Annual Meeting 2026, Sept. 2026, Oak Ridge TN (online), Invited Talk, Title: "Inhibitor-enhanced atomic layer deposition of high-k dielectric on 2D materials"
168. International Conference on Atomic Layer Processing of Hybrid Materials (H-ALP26), Sept. 2026, Rijeka, Croatia, Invited Talk, Title: "Emerging Reaction Pathways in Vapor-Phase Infiltration in Polymers"
167. SPIE Optics + Photonics, Aug. 2026, San Diego CA, Invited Talk, Title: "Atomic layer deposition approaches for future extremely scaled microelectronic devices"
166. DOE Microelectronics Pilot Kickoff Meeting, Aug. 2026, Albany NY, Invited Talk, Title: "Next-Generation EUV & Beyond EUV Interference Lithography Capability"
165. US-Korea Conference (UKC) 2026, Aug. 2026, Orlando FL, Invited Talk, Title: "Cooperation with DOE National Laboratories"
164. EUV Resist Workshop, July 2026, NY CREATES / Albany NanoTech, Albany NY, Invited Talk, Title: "EUV Resist Characterization Capabilities at Brookhaven National Laboratory"
163. Stony Brook University, Garcia Center for Polymers at Engineered Interfaces, July 2026, Stony Brook NY, Invited Lecture, Title: "Overview of Atomic Layer Deposition"
162. 29th Lithography Workshop, June 2026, Sedona AZ, Invited Talk, Title: "Advanced Characterizations for Extreme-Scale Lithography"
161. 2026 EUVL and Source Workshop, June 2026, Berkeley CA, Invited Talk, Title: "EUV Research Activities and Infrastructure Development at Brookhaven National Laboratory"
160. NSLS-II & CFN Users' Meeting, April 2026, Upton NY, Invited Talk, Title: "EUV Research Activities and Capabilities at Center for Functional Nanomaterials",
159. NSLS-II & CFN Users' Meeting, April 2026, Upton NY, Invited Talk, Title: "Effects of Materials Phase and Stoichiometry on Neuromorphic Switching Behaviors in Ultrathin Metal Oxides"
158. TMS 2026 155th Annual Meeting & Exhibition, Mar. 2026, April 2026, San Diego CA, Keynote Talk, Title: "Vapor-Synthesized Organic–Inorganic Hybrid Thin Films for Extreme Ultraviolet (EUV) Lithography"
157. TechConnect 2026 (TechConnect World Innovation Conference and Expo), Raleigh NC, Mar. 2026, Invited Talk, Title: "Overcoming Challenges in Atomic Layer Deposition of Dielectric Films on 2D van der Waals Materials"
156. North Carolina State University, Dept. Chemical and Biomolecular Engineering, Mar. 2026, Raleigh NC, Invited Seminar, Title: "Introduction to BNL and Microelectronics Research at CFN"

155. Semicon Korea 2026, Seoul, Feb. 2026, South Korea, Invited Talk, Title: "Atomic Layer Deposition Processes for Future Extremely Scaled Semiconductor Devices"
154. BNL-University at Albany EUV Materials Workshop, Dec. 2025, Upton NY, Invited Talk, Title: "Vapor-processed EUV patterning materials"
153. Stony Brook University, Department of Materials Science and Chemical Engineering, Nov. 2025, Stony Brook NY, Invited Lecture, Title: "Application of Atomic Layer Deposition Techniques for Microelectronics"
152. University of Connecticut, Institute of Materials Science, Nov. 2025, Storrs CT, Invited Seminar, "Vapor-Phase Infiltration for Novel Organic-Inorganic Hybrid Synthesis and Advanced Patterning Applications"
151. National Synchrotron Light Source II (NSLS-II) Scientific Focus Group – Neuromorphic Materials and Devices, Brookhaven National Laboratory, Oct. 2025, Upton NY, Invited Talk, Title "VANGARD — Vertically Integrated Accelerated Next-Generation Lithography & Advanced Materials Research & Development"
150. Materials Science & Technology (MS&T) 2025, Sept. 2025, Columbus OH, Invited Talk, Title: "Novel Organic-Inorganic Hybrid Thin Films for Energy-Efficient Future Microelectronics"
149. 2025 Next Generation Lithography + Patterning Conference, scheduled in August 2025, Suwon/online, South Korea, Invited Talk, Title: "Organic-Inorganic Hybrid Photoresists Synthesized by Atomic Layer Deposition Techniques for Next-Generation Extreme Ultraviolet (EUV) Lithography"
148. SPIE Optics + Photonics 2025, scheduled in August 2025, San Diego CA, Invited Talk, Title "Vapor-phase infiltration (VPI) for advanced patterning, device, and microelectronics applications"
147. Stony Brook University, Garcia Center for Polymers at Engineered Interfaces, July 2025, Stony Brook NY, Invited Lecture, Title: "Overview of Atomic Layer Deposition"
146. Dept. Materials Science and Engineering, Korea University, June 2025, Seoul, South Korea, Invited Seminar, Title: "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
145. 2025 EUVL and Source Workshop, June 2025, MIT Lincoln Laboratory, Lexington MA, Invited Talk, Title: "Organic-Inorganic Hybrid EUV Photoresists Derived from Atomic Layer Deposition Techniques"
144. The 68th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), May 2025, Savannah GA, Invited Talk, Title: "Vapor-phase infiltration (VPI) synthesis of organic-inorganic hybrid resists for next-generation extreme ultraviolet (EUV) lithography"
143. University at Albany, Department of Nanoscale Science & Engineering, April 2025, Albany NY, Invited Seminar, Title: "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
142. AVS Hudson Mohawk Chapter – 2025 Spring Meeting, April 2025, Albany NY, Invited Talk, Title: "Vapor-Phase Infiltrated Organic-Inorganic Hybrid Thin Films for Extreme Ultraviolet Lithography"
141 2025 NSLS-II & CFN Joint Users' Meeting, April 2025, Brookhaven National Laboratory, Upton NY, Invited Talk, Title: "Stochastic switching in memristive materials and devices"
140. 2025 NSLS-II & CFN Joint Users' Meeting, April 2025, Brookhaven National Laboratory, Upton NY, Invited Talk, Title: "Vapor-synthesized hybrid resists for next-generation EUV lithography application"
139. TMS 2025 154th Annual Meeting & Exhibition, March 2025, Las Vegas NV, Invited Talk, Title: "Controlling Structural and Electrical Properties of ZnO Nanowires Derived from Self-Assembled Block Copolymers and Vapor-Phase Infiltration"
138. National Synchrotron Light Source II (NSLS-II) Scientific Focus Group – Neuromorphic Materials and Devices, Brookhaven National Laboratory, Jan. 2025, Upton NY, Invited Seminar, Title "Overview of memristor materials being studied at CFN"
137. University of Texas at Dallas, Department of Materials Science and Engineering, Nov. 2024, Richardson TX, Invited Seminar, Title "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
136. Stony Brook University, Department of Materials Science and Chemical Engineering, Nov. 2024, Stony Brook NY, Invited Lecture, Title: "Application of Atomic Layer Deposition Techniques for Microelectronics"
135. Materials Science & Technology (MS&T) 2024, Oct. 2022, Pittsburgh PA, Invited Talk, Title: "Controlling Switching Stochasticity in Hybrid Memristors by Vapor-Phase Infiltration"
134. US-Korea Conference (UKC) 2024, August 2024, San Francisco CA, Invited Talk, Title: "Careers at U.S. Department of Energy (DOE) National Laboratories"
133. UKC 2024, August 2024, San Francisco CA, Invited Talk, Title: "Research Landscapes in Extremely Scaled Energy-Efficient Next-Generation Microelectronics"
132. 2024 American Chemical Society Fall Meeting, August 2024, Denver CO, Invited Talk, Title: "Advanced Materials Nanopatterning Enabled by Vapor-Phase Infiltration (VPI) / Sequential Infiltration Synthesis (SIS)"
131. 2024 American Chemical Society Fall Meeting, August 2024, Denver CO, Invited Talk, Title: "Extreme Ultraviolet (EUV) Lithography Patterning Characteristics of Organic-Inorganic Hybrid Photoresist Generated by Vapor-Phase Infiltration (VPI)"
130. 2024 EUVL Workshop and Supplier Showcase, June 2024, Lawrence Berkeley National Laboratory, Berkeley CA, Invited Talk, Title: "DOE Accelerate Initiative Project for Accelerating Next-Generation EUV Photoresist Development"
129. IBM T.J. Watson Research Center, Microelectronics Research Lab, March 2024, Yorktown NY, Title: "CFN Intro and Microelectronics Capabilities"
128. SPIE Advanced Lithography + Patterning 2024, Feb. 2024, San Jose CA, Invited Talk, Title: "Vapor-phase infiltration (VPI) / sequential infiltration synthesis (SIS) for advanced patterning applications"
127. Stanford University, Dept. Chemical Engineering, Stacey Bent group, Invited Seminar, Feb. 2024, Stanford CA, Title: "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"

126. Computational Science Initiative (CSI), BNL, Feb. 2023, Upton NY, Invited Talk, Title: "Machine Learning and Algorithm Needs for Microelectronics Research"
125. National Synchrotron Light Source II (NSLS-II), BNL, Dec. 2023, Upton NY, Invited Talk, Title: "Materials challenges in energy-efficient next-generation microelectronics"
124. Stony Brook University, Department of Materials Science and Chemical Engineering, Nov. 2023, Stony Brook NY, Invited Lecture, Title: "Application of Atomic Layer Deposition Techniques for Microelectronics"
123. University of Texas at Arlington, Department of Materials Science and Engineering, November 2023, Arlington TX, Invited Seminar, Title: "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
122. MS&T 2023, Oct. 2022, Columbus OH, Invited Talk, Title: "Two-dimensional material additives in hybrid perovskite solar cells for improving performance"
121. Atomic Layer Infiltration and Deposition for Functional Hybrid Materials 2023 Workshop, September 2023, Technion – Israel Institute of Technology, Haifa, Israel, Invited Talk, Title: "Application of Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
120. Atomic Layer Infiltration and Deposition for Functional Hybrid Materials 2023 Workshop, September 2023, Technion – Israel Institute of Technology, Haifa, Israel, Invited Tutorial Lecture, Title: "Basics of vapor-phase materials deposition and introduction to atomic layer deposition"
119. 2023 Next Generation Lithography (NGL) Conference, August 2023, Suwon, Korea (virtual), Invited Talk, Title: "Vapor-Synthesized Organic-Inorganic Hybrid EUV Photoresists via Atomic Layer Deposition Techniques"
118. UKC 2023, August 2023, Dallas / Fort Worth TX, Invited Talk, Title: "Vapor-Phase Infiltration for Microelectronics Applications"
117. IEEE Nano 2023, July 2023, Jeju, Korea, Invited Talk, Title: "Application of 2D materials as additives in hybrid perovskite solar cells for improved performance and stability"
116. Ulsan National Institute of Science and Technology (UNIST), Department of Chemistry, July 2023, Ulsan, Korea, Invited Seminar, Title: "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
115. Pohang University of Science and Technology (POSTECH), Dept. Materials Science and Engineering, July 2023, Pohang, Korea, Invited Seminar, Title: "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
114. Stony Brook University, Garcia Center for Polymers at Engineered Interfaces, June 2023, Stony Brook NY, Invited Lecture, Title: "Overview of Atomic Layer Deposition"
113. 2023 EUVL Workshop and Supplier Showcase, June 2023, IMEC, Leuven, Belgium, Invited Talk, Title: "Atomic Layer Deposition Derived Organic-Inorganic Hybrid EUV Resists"
112. University of Southern California, Ming Hsieh Institute Seminar Series, May 2023, Los Angeles CA, Title: "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
111. Northrop Grumman - Brookhaven Workshop, May 2023, Redondo Beach CA, Invited Talk, Title: "CFN Research Capabilities for Microelectronics".
110. Northeast Regional Conference (NRC) 2023, Korean American Scientists and Engineers Association (KSEA), April 2023, Montclair NJ, Keynote Talk, Title: "Energy-Efficient, Extremely Downscaled Semiconductor Devices"
109. Tokyo Electron Ltd. (TEL) at Albany NanoTech, April 2023, Albany NY, Invited Seminar, Title: "Organic-Inorganic Hybrid EUV Photoresists Derived from Atomic Layer Deposition"
108. University of California, Irvine, Department of Mechanical Engineering, March 2023, Irvine CA, Invited Seminar, Title: "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
107. Lawrence Berkeley National Laboratory, The Molecular Foundry, Jan. 2023, Berkeley CA, Invited Seminar, Title: "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
106. Stony Brook University, Department of Materials Science and Chemical Engineering, Nov. 2022, Stony Brook NY, Invited Lecture, Title: "Application of Atomic Layer Deposition Techniques for Microelectronics"
105. Stony Brook University, Department of Materials Science and Chemical Engineering, Nov. 2022, Stony Brook NY, Department Colloquium, Title: "Vapor-Phase Infiltration for Energy-Efficient, Extremely Downscaled Semiconductor Devices"
104. MS&T 2022, Oct. 2022, Pittsburgh PA, Invited Talk, Title: "Microelectronics Application of Vapor-phase infiltration – Atomic Layer Deposition Derived Organic-Inorganic Hybridization Technique"
103. EMD Electronics / Intermolecular, September 2022, San Jose CA, Invited Seminar, Title: "Organic-Inorganic Hybrid EUV Photoresists Derived from Vapor-Phase Infiltration"
102 Molecular Vista, September 2022, San Jose CA, Invited Seminar, Title: "Vapor-Phase Infiltration (VPI) Synthesis of Organic-Inorganic Hybrids"
101. 2022 Center for Integrated Nanotechnologies (CINT) User Meeting, September 2022, Virtual, Invited Talk, Title: "Vapor-Phase Infiltration: Enhancing Functionalities of Self-Assembled Block Copolymer Templates"
100. SRC, NMP Technology Transfer e-Workshop, September 2022, Virtual, Invited Talk, Title: "Novel Organic-Inorganic Hybrid EUV Dry Resists Deposited by Molecular Atomic Layer Deposition (MALD)"
99. UKC 2022, August 2022, Arlington VA, Invited Talk, Title: "Development of Hybrid EUV Resists by Atomic Layer Deposition"
98. University of Science and Technology (UST) Global Mentoring Conference, July 2022, Virtual (South Korea), Invited Talk, Title: "Vapor-Phase Infiltration for Microelectronics Applications"

96. Stony Brook University, Garcia Center for Polymers at Engineered Interfaces, July 2022, Stony Brook NY, Invited Lecture, Title: "Overview of Atomic Layer Deposition"
95. IMEC, Advanced Patterning Group, June 2022, Leuven, Belgium, Invited Seminar, Title: "Atomic Layer Deposition Derived Organic-Inorganic Hybrid EUV Resists and Applications of Vapor-Phase Infiltration"
94. EUVL Workshop, June 2022, Virtual (Berkeley CA), Invited Talk, Title: "Atomic Layer Deposition Derived Organic-Inorganic Hybrid EUV Resists"
93. 241st Electrochemical Society (ECS) Meeting, June 2022, Vancouver BC, Canada, Invited Talk, Title: "Vapor-Phase Infiltration for Microelectronics Applications"
92. 2022 NSLS-II & CFN Joint Users' Meeting, May 2022, Upton NY (virtual), Invited Talk, "Introduction to CFN: Microelectronics Related Capabilities"
91. 2022 Materials Research Society (MRS) Spring Meeting, May 2022, Honolulu HI (virtual), Invited Talk, Title: "Vapor-Phase Infiltration (VPI): An Emerging Hybrid Synthesis and Nanopatterning Method Derived from Atomic Layer Deposition (ALD) for Microelectronics Applications"
90. The Ohio State University, Department of Materials Science and Engineering, May 2022, Columbus OH, Invited Seminar, Title: "Vapor-Phase Infiltration (VPI): An Emerging Organic-Inorganic Hybrid Synthesis and Nanopatterning Method Derived from Atomic Layer Deposition (ALD) for Microelectronics Applications"
89. 2022 TMS 151th Annual Meeting & Exhibition, March 2022, Anaheim CA, Invited Talk, Title: "Vapor-phase infiltration synthesis of functional organic-inorganic hybrid nanocomposites"
88. UKC 2021, December 2021, Garden Grove CA, Invited Talk, Title: "Controlling Switching Stochasticity in Hybrid Memristors by Vapor-Phase Infiltration"
87. Stony Brook University, Department of Materials Science and Chemical Engineering, Nov. 2021, Stony Brook NY (virtual), Invited Lecture, Title: "Atomic Layer Deposition Techniques for Microelectronics Applications"
86. 34th International Microprocesses and Nanotechnology Conference (MNC 2021), Oct. 2021, Virtual, Invited Talk, Title: "Vapor-Phase Infiltration for Microelectronics Applications"
85. MS&T 2021, Oct. 2021, Columbus OH (in-person/virtual hybrid due to COVID-19), Invited Talk, Title: "Grain Boundary Passivation for Enhancing Stability of Hybrid Perovskite Solar Cells"
84. 12th International Symposium on Natural Sciences, Research Institute of Basic Sciences, Incheon National University, Oct. 2021, Incheon, South Korea (virtual due to COVID-19), Invited Talk, Title: "Vapor-Phase Infiltration for Microelectronics Applications"
83. 2021 SSRL/LCLS Users Meeting, Sept. 2021, Stanford CA (virtual due to COVID-19), Invited Talk, Title: "Vapor-Phase Infiltration for Microelectronics Applications"
82. Garcia Center for Polymers at Engineered Interfaces, Stony Brook University, July 2021, Stony Brook NY (virtual due to COVID-19), Invited Lecture, Title: "Electron Microscopy"
81. Garcia Center for Polymers at Engineered Interfaces, Stony Brook University, June 2021, Stony Brook NY (virtual due to COVID-19), Invited Lecture, Title: "Overview of Atomic Layer Deposition"
80. 2021 EUVL Workshop, June 2021, Virtual, Invited Talk, Title: Synthesis of Organic-Inorganic Hybrid EUV Resists by Atomic Layer Deposition
79. Northrop Grumman/Brookhaven Lab Workshop, May 2021, Invited Talk, Title: Vapor-phase infiltration for microelectronics applications
78. 2021 TMS 150th Annual Meeting & Exhibition, March 2021, Virtual, Invited Talk, Title: "Direct Backbone Attachment of Polyesters on Grain Boundaries Enhances Chemical Stability and Suppressing Ion Migration in $CH_3NH_3PbI_3$ Hybrid Perovskite Solar Cells"
77. UKC 2020, December 2020, Virtual, Invited Talk, Title: "Ultrathin Amorphous Titanium Oxide Field-Effect Transistors with Large Gate-Induced Electron Mobility Modulation"
76. MS&T 2020, Nov. 2020, Virtual, Invited Talk, Title: "Polymer Additives for Stable Hybrid Perovskite Solar Cells"
75. INL and BNL Energy Research and Technology Forum, Oct. 2020, Virtual, Invited Talk, Title: "Materials Deposition and Synthesis Capabilities at CFN"
74. International Webinar on Frontiers in Materials for Technological Applications (FIMTA 2020), CSIR-Institute of Minerals and Materials Technology, August 2020, Keynote Lecture, Title: "Functional organic-inorganic hybrids and inorganic nanostructures generated by infiltration synthesis"
73. Garcia Center for Polymers at Engineered Interfaces, Stony Brook University, June 2020, Stony Brook NY (virtual due to COVID-19), Invited Lecture, Title: "Overview of Atomic Layer Deposition"
72. 2020 EUVL Workshop, June 2020, Berkeley CA (virtual due to COVID-19), Invited Talk, Title: "Vapor-phase infiltration synthesis of organic-inorganic hybrid nanocomposite resists towards EUVL"
71. 2020 NSLS-II & CFN Users' Meeting, May 2020, Upton NY (virtual due to COVID-19), Invited Talk, Title: "Electron microscopy"
70. 237th ECS Meeting, May 2020, Montreal Canada (conference cancelled due to COVID-19), Invited Talk, Title: "Nanopatterning functional metal oxide nanostructures by vapor-phase infiltration in polymer templates"
69. 2020 TMS 149th Annual Meeting & Exhibition, Feb. 2020, San Diego CA, Invited Talk, Title: "Vapor-phase infiltration synthesis of organic-inorganic hybrid nanocomposite resists for next generation lithography"
68. Texas A&M University, Department of Chemistry, Nov. 2019, College Station TX, Invited Seminar, Title: "Functional organic-inorganic hybrids and inorganic nanostructures generated by infiltration synthesis"

67. University of Houston, Department of Physics, Nov. 2019, Houston TX, Invited Colloquium, Title: "Functional organic-inorganic hybrids and inorganic nanostructures generated by infiltration synthesis"
66. Rice University, Department of Materials Science and Nanoengineering, Nov. 2019, Houston TX, Invited Seminar, Title: "Functional organic-inorganic hybrids and inorganic nanostructures generated by infiltration synthesis"
65. SIS2019: Workshop on Sequential Infiltration Synthesis (SIS), Oct. 2019, Milan Italy, Invited Talk, Title: "Functional hybrids and inorganic nanostructures generated by infiltration synthesis"
64. MS&T 2019, Oct. 2019, Portland OR, Invited Talk, Title: "Functional organic-inorganic hybrids and inorganic nanostructures generated by infiltration synthesis"
63. University of New Mexico, Department of Chemistry, Albuquerque NM, Sept. 2019, Invited Seminar, Title: "Functional organic-inorganic hybrids and inorganic nanostructures generated by vapor-phase inorganic infiltration in polymer templates"
62. 2019 CINT Meeting, Santa Fe NM, Sept. 2019, Invited Talk, Title: "2D heterostructure Research at the Center Functional Nanomaterials (CFN) at Brookhaven National Laboratory"
61. Stony Brook University, Department of Materials Science and Chemical Engineering, Sept. 2019, Stony Brook NY, Invited Lecture, Title: "Overview of atomic layer deposition"
60. Lawrence Berkeley National Laboratory, Molecular Foundry, Invited Seminar, Sept. 2019, Berkeley CA, Title: "Functional organic-inorganic hybrids and inorganic nanostructures generated by infiltration synthesis"
59. UKC 2019, August 2019, Rosemont IL, Invited Talk, Title: "Functional Hybrids and Inorganic Nanostructures Derived from Infiltration Synthesis in Polymer Templates"
58. Argonne National Laboratory, Center for Molecular Engineering, August 2019, Lemont IL, Invited Seminar: "Functional organic-inorganic hybrids and inorganic nanostructures generated by infiltration synthesis"
57. Garcia Center for Polymers at Engineered Interfaces, Stony Brook University, July 2019, Stony Brook NY, Invited Lecture, Title: "Overview of Atomic Layer Deposition"
56. 2019 IEEE Long Island Systems, Applications and Technology (LISAT) Conference, May 2019, Farmingdale NY, Invited Talk, Title: "Application of Atomic Layer Deposition for Functional Organic-Inorganic Hybrids and Nanostructured Semiconductor Devices"
55. BNL, CFN, March 2019, Upton NY, Invited Colloquium, Title: "Materials Innovation in Hybrid Nanocomposites, Nanofabrication, and Semiconductor Nanostructures by Atomic Layer Deposition"
54. University of Pittsburgh, Department of Mechanical Engineering and Materials Science, Feb. 2019, Pittsburgh PA, Invited Seminar, Title: "Atomic Layer Deposition Techniques Towards Materials Innovation in Hybrid Nanocomposite, Nanofabrication, and Semiconductor Nanostructures"
53. Massachusetts Institute of Technology (MIT), Micro-Nano Seminar Series, Nov. 2018, Boston MA, Invited Seminar, Title: "Infiltration Synthesis by Atomic Layer Deposition: Hybrid Nanocomposite and Metal Oxide Nanostructures with Enhanced Physical and Optoelectronic Properties"
52. The 70th Southeastern Regional Meeting of American Chemical Society, Nov. 2018, Augusta GA, Invited Talk, "Infiltration Synthesis via Atomic Layer Deposition: CMOS-Compatible Synthesis and Photodetector-Integration of Parallel-Aligned Ultrathin ZnO Nanowire Arrays"
51. Georgia Institute of Technology, Dept. Materials Science and Engineering, Nov. 2018, Atlanta GA, Invited Seminar, "Infiltration Synthesis by Atomic Layer Deposition: Materials Hybridization and Metal Oxide Nanostructures with Enhanced Physical and Optoelectronic Properties"
50. Stony Brook University, Department of Materials Science and Chemical Engineering, Oct. 2018, Stony Brook NY, Invited Lecture, Title: "Overview of atomic layer deposition"
49. Korea Atomic Energy Research Institute (KAERI), August 2018, Daejon, South Korea, Invited Seminar, "Infiltration Synthesis by Atomic Layer Deposition for Materials Hybridization and Metal Oxide Nanostructures with Enhanced Physical and Optoelectronic Properties"
48. Electronics and Telecommunications Research Institute (ETRI), August 2018, Daejon, South Korea, Invited Seminar, "Infiltration Synthesis by Atomic Layer Deposition for Materials Hybridization and Metal Oxide Nanostructures with Enhanced Physical and Optoelectronic Properties"
47. IUMRS-ICEM 2018, August 2018, Daejon, South Korea, Invited Talk, "Fully CMOS-Compatible Synthesis and Photodetector-Integration of Ultrathin, Parallel-Aligned ZnO Nanowire Arrays by Infiltration Synthesis"
46. Korea Institute of Industrial Technology (KITECH), August 2018, Inchon, South Korea, Invited Seminar, "Infiltration Synthesis by Atomic Layer Deposition for Materials Hybridization and Metal Oxide Nanostructures with Enhanced Physical and Optoelectronic Properties"
45. UKC 2018, August 2018, Queens NY, Invited Talks, "Materials Nanopatterning via Vapor-Phase Infiltration in Polymer Templates by Atomic Layer Deposition"; "Application of Quantum Dot Sensitization on Two-Dimensional Semiconductors for Improved Light Harvesting"
44. Gwangju Institute of Science and Technology (GIST), School of Materials Science and Engineering, July 2018, Gwangju, South Korea, Invited Seminar, "Infiltration Synthesis via Atomic Layer Deposition for Materials Hybridization and Metal Oxide Nanostructures with Enhanced Physical and Optoelectronic Properties"
43. Hanyang University, Div. Materials Science and Engineering, July 2018, Seoul, South Korea, Invited Seminar, "Infiltration Synthesis by Atomic Layer Deposition: Synthesis of Hybrid Nanocomposite and Metal Oxide Nanostructures with Enhanced Physical and Optoelectronic Properties"

42. Garcia Center for Polymers at Engineered Interfaces, Stony Brook University, July 2018, Stony Brook NY, Invited lecture, "Overview of Atomic Layer Deposition"
41. Center for Plastic Electronics Annual Symposium, Imperial College of London, June 2018, London, United Kingdom, Invited Talk, "Regulating Internal Morphology of Polymer:Fullerene Bulk Heterojunction Solar Cells with Tertiary Polymer Components"
40. University of South Florida, College of Engineering, April 2018, Tampa FL, Invited Seminar, "Infiltration Synthesis by Atomic Layer Deposition: Synthesis of Hybrid Nanocomposite and Metal Oxide Nanostructures with Enhanced Physical and Optoelectronic Properties"
39. 2018 SPIE Defense and Commercial Sensing (DCS) Symposium, April 2018, Orlando FL, Invited Talk, "Application of Quantum Dot Sensitization on Two-Dimensional Semiconductors for Improved Light Harvesting"
38. Stony Brook University, Dept. Materials Science and Chemical Engineering, Feb. 2018, Stony Brook NY, Department Colloquium, "Materials Infiltration by Atomic Layer Deposition: Synthesis of Hybrid Nanocomposite and Metal Oxide Nanostructures with Enhanced Mechanical and Optoelectronic Properties"
37. Auburn University, Dept. Physics, January 2018, Auburn AL, Department Colloquium, "Direct Patterning Semiconductor Nanostructures and Synthesis of Hybrid Materials via Material Infiltration by Atomic Layer Deposition"
36. University of Nevada, Reno, Dept. Chemical and Materials Engineering, Dec. 2017, Reno NV, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Material Infiltration by Atomic Layer Deposition"
35. Boston University, Dept. Mechanical Engineering, Nov. 2017, Boston MA, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Material Infiltration by Atomic Layer Deposition"
34. Naval Research Laboratory, August 2017, Washington DC, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Material Infiltration by Atomic Layer Deposition"
33. UKC 2017, August 2017, Washington DC, Invited Talk, "Ultrahigh Elastic Strain Energy Storage in Organic-Inorganic Hybrid Polymer Nanopillars Generated by Metal Oxide Infiltration Synthesis"
32. University of Colorado Boulder, Dept. Mechanical Engineering, July 2017, Boulder CO, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Material Infiltration by Atomic Layer Deposition"
31. Stony Brook University, The Garcia Center for Polymers at Engineered Interfaces, June 2017, Stony Brook NY, Invited Lecture, "Introduction to Organic and Hybrid Solar Cells"
30. Stevens Institute of Technology, Dept. Mechanical Engineering, May 2017, Hoboken NJ, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Infiltration Synthesis"
29. KSEA Northeast Regional Conference, April 2017, Newark NJ, Invited Talk, "Application of Resonant Energy Transfer for Enhanced Light Harvesting in Ultrathin Inorganic Solar Cell and Two-Dimensional Layered Semiconductors".
28. University of Central Florida, NanoScience Technology Center, Orlando FL, February 2017, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Infiltration Synthesis"
27. University of Texas at Dallas, Dept. Materials Science and Engineering, Richardson TX, August 2016, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Infiltration Synthesis"
26. UKC 2016, August 2016, Dallas TX, Invited Talk, "Application of Resonant Energy Transfer for Enhanced Light Harvesting in Ultrathin Inorganic Solar Cell and Two-Dimensional Layered Semiconductors"
25. Oak Ridge National Laboratory, Center for Nanophase Materials Sciences, June 2016, Oak Ridge TN, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Infiltration Synthesis".
24. KSEA Northeast Regional Conference, April 2016, Englewood NJ, Invited Talk, "Overview of Device Nanostructuring for Efficient Polymer and Hybrid Solar Cells".
23. 2016 TMS 145th Annual Meeting & Exhibition, Feb. 2016, Nashville TN, Invited Talk, "Inorganic Infiltration in Polymer Templates via Atomic Layer Deposition: Pathway for Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures"
22. New Jersey Institute of Technology, Dept. Electrical & Computer Eng., Jan. 2016, Newark NJ, Department Seminar, "Device Nanostructuring for Efficient Polymer and Hybrid Solar cells"
21. Stony Brook University, Dept. of Mater. Sci. Eng., Oct. 2015, Stony Brook NY, Department Colloquium, "Application of Nanofabriation for Energy Conversion and Electronic Devices"
20. University of Connecticut, Dept. of Mater. Sci. Eng., April 2015, Storrs CT, Department Seminar, "Direct Patterning of Arbitrary Metal Oxide Nanostructures Using Polymer Template Nanoreactors"
19. Stony Brook University, Dept. of Mater. Sci. Eng., December 2014, Stony Brook NY, Department Colloquium, "Nanostructuring Materials for Energy Applications"
18. Korea Institute of Science and Technology (KIST), Center for BioMircosystems, October 2014, Seoul, Korea, Invited Seminar, "Infiltration Synthesis of Metal Oxide Nanostructures in Polymer Templates"
17. Stony Brook University, The Garcia Center for Polymers at Engineered Interfaces, July 2014, Stony Brook NY, Invited Lecture, "Overview of Organic Solar Cells"
16. Nanotech 2014, June 2014, National Harbor MD (Washington DC), Invited Talk, "Metal Oxide Nanopatterning via Infiltration Synthesis in Polymer Templates"
15. 2014 Advanced Energy Conference, April 2014, Albany NY, Invited Talk, "Charge Transport in Organic Polymer Solar cells"
14. Stony Brook University, Dept. of Mater. Sci. and Eng., Feb. 2014, Stony Brook NY, Invited Seminar, "Infiltration Synthesis of Metal Oxide Nanostructures in Polymer Templates"

13. UKC 2013, August 2013, East Rutherford NJ, Invited Talk, "Infiltration Synthesis of Metal Oxide Nanopatterns on Diblock Copolymer Templates"
12. UKC 2012, August 2012, Los Angeles CA, Invited Talk, "Recent Progress in Organic Bulk Heterojunction Solar Cells"
11. City University of New York, Queens College, Dept. of Chemistry and Biochemistry, March 2011, Flushing NY, Department Seminar, "Device Nanostructuring for Efficient Organic Blend Solar Cells"
10. Brookhaven National Laboratory, Center for Functional Nanomaterials, June 2010, Upton NY, Invited Seminar, "Nanostructuring for Efficient Energy Conversion Devices"
9. Temple University, Dept. of Mech. Eng., May 2010, Philadelphia PA, Invited Seminar, "Nanostructuring for Efficient Energy Conversion Devices"
8. KSEA Northeast Regional Conference, May 2010, Somerset NJ, Invited Talk, "Nanostructured Contacts for Efficient Plastic Solar Cells"
7. KAIST, Graduate School of EEWS, Nov. 2009, Taejon, Korea, Invited Seminar, "Nanostructuring for Efficient Plastic Solar Cells and Thermoelectric Devices"
6. PennEnergy Colloquium, Nov. 2009, University of Pennsylvania, Philadelphia PA, Invited Seminar, "Nanostructuring for High Performance Organic Bulk Heterojunction Solar Cells"
5. NSLS-CFN User Meeting, May 2009, BNL, Upton NY, Invited Talk, "High Performance Air-Processed Polymer-Fullerene Solar Cells Having Nanostructured Electrical Contacts"
4. Columbia University Nanocenter Summer Retreat, April 2009, Short Hills NJ, Invited Talk, "High Performance All Air-Processed Polymer-Fullerene Solar Cells"
3. Korea University, Dept. of Mater. Sci. and Eng., November 2008, Seoul, Korea, "Invited Seminar", "Structure-Property Relations in Nanoscale: Polythiophene-Methanofullerene Solar Cells and Gallium Nitride Nanowires"
2. Pohang University of Science and Technology (POSTECH), Dept. of Mater. Sci. and Eng., Nov. 2008, Pohang, Korea, Invited Seminar, "Structure-Property Relations in Nanoscale: Polythiophene-Methanofullerene Solar Cells and Gallium Nitride Nanowires"
1. Brookhaven National Laboratory, Center for Functional Nanomaterials, Jan. 2007, Upton NY, Invited Seminar, "Gallium nitride nanowires: Polar Surface Controlled Growth, Ohmic Contact Patterning by Focused Ion Beam Induced Direct Pt Deposition; Variable Range Hopping, and Resonant Electromechanical Properties"

Media Coverage

21. *Science*, interview on advanced semiconductor scaling and microelectronics. https://www.science.org/content/article/engineers-cram-100-billion-transistors-microchip, June 2026
20. *The Wall Street Journal*, interview on semiconductor scaling and photolithography. https://www.wsj.com/tech/silicon-chips-moores-law-photolithography-91b9ac4f?mod=mhp, Feb. 2026
19. "Meet the 2024 Science & Technology Award Recipients", BNL Newsroom, November 2024
18. "Hacking DNA to Make Next-Gen Materials", BNL Newsroom, January 2024
17. "A Bright Future for Extreme UV Lithography at Brookhaven Lab", BNL Newsroom, November 2023
16. "Department of Energy Announces $73 Million for Basic Research to Accelerate the Transition from Discovery to Commercialization", BNL Newsroom, September 2023
15. "Scientists Build Nanoscale Parapets, Aqueducts, and Other Shapes", BNL Newsroom, November 2022
14. "Brookhaven Lab's Chang-Yong Nam Named a Battelle 'Inventor of the Year'", BNL Newsroom, May 2022
13. "Top-10 Areas of Amazing Science at Brookhaven Lab in 2021", BNL Newsroom, Dec. 2021
12. "Next-Gen Semiconductor Manufacturing Tech Wins DOE National Pitch Competition", BNL Newsroom, Nov. 2021
11. "Layered Graphene with a Twist Displays Unique Quantum Confinement in 2-D", BNL Newsroom, August 2021
10. "Synthesis Method Expands Material Possibilities", BNL Feature, April 2021
9. Top 100, the Create the Future 2020 Design Contest, "Hybrid Organic-Inorganic Photoresists for Next-Generation Microelectronics", Tech Brief Media Group, Dec. 2020
8. "Stabilizing High-Efficiency Solar Cells", BNL Newsroom, Newswise, April 2020
7. "Enhancing Materials for Hi-Res Patterning to Advance Microelectronics", BNL Newsroom, Phys.org, Newswise, August 2019
6. "Adding an Inert Polymer to Plastic Solar Cells Enables High Efficiency and Easy Production", Stony Brook University Newsroom; Phys.org; BNL Newsroom, July 2018
5. "Tubular Science Improves Polymer Solar Cells", U.S. DOE Basic Energy Sciences website; Newswise; Phys.org, June 2018
4. "Understanding the Generation of Light-Induced Electrical Current in Atomically Thin Nanomaterials", BNL Newsroom; Newswise, May 2018
3. "Scientists Engineer Nanoscale Pillars to Act Like Memory Foam", BNL Features; UConn Today; Phys.org; Hopkins Materials; Chemical Industry Digest, December 2017
2. "Scientists Set Record Resolution for Drawing at the One-Nanometer Length Scale", BNL Newsroom; Newswise; U.S. DOE Basic Energy Science Highlights; April 2017
1. "Quantum Dots Enhance Light-to-Current Conversion in Layered Metal Dichalcogenide Semiconductors", BNL Newsroom; ScienceDaily, April 2016

Synergistic Activities

Journal Editorship

- Associate Editor, *Frontiers of Materials*, Semiconducting Materials and Devices, 2020 – p
- Subject Editor/Advisor, *JOM*, 2017 – 2019

Grant/Research Proposal Review Panel and Other Services

- Army Research Office, mail-in proposal review panel, 2026
- Department of Materials Science and Engineering, Pohang University of Science and Technology (POSTECH), mail-in reviewer for full professor promotion case, 2026
- Microelectronics and Advanced Packaging Technologies (MAPT) Roadmap 2.0 Development Committee, Semiconductor Research Corporation (SRC); MAPT 2.0 published in Oct. 2025. https://srcmapt.org/
- Blue-X Technical Working Group (TWG) for future beyond-EUV (BEUV; sub-7 nm wavelength) lithography, Dec. 2024 – p
- U.S. DOE Office of Sciences Roundtable on Transformational Science Enabled by AI: Fabrication Science, in-person participant, 2024
- U.S. DOE Office of Basic Energy Sciences, mail-in proposal review panel, 2026, 2025, 2022, 2012
- U.S. DOE Office of Basic Energy Sciences, mail-in proposal review panel, SBIR/STTR, 2021, 2019
- U.S. DOE Experimental Program to Stimulate Competitive Research (EPSCoR) Implementation Grants, mail-in proposal review panel, 2011
- NSF, DMR, Electronic and Photonic Materials (EPM) Program, mail-in proposal review panel, 2021
- NSF, CBET, DMREF, in-person proposal review panel, 2019
- NSF, DMR Polymer Program, mail-in proposal review panel, 2017
- BNL, LDRD (Laboratory Directed Research and Development) funding, 2021
- Los Alamos National Laboratory (LANL), mail-in LDRD proposal review panel, 2026
- LBNL, Advanced Light Source, Proposal Study Panel, 2023
- LBNL, Molecular Foundry, Proposal Review Board, 2023
- ACS Petroleum Research Fund, mail-in proposal review panel, 2021, 2017, 2016
- European Research Council (ERC), Starting Grants, mail-in proposal review panel, 2018
- Brain Kore (BK) 21, Internal Program Review Panel, Pohang University of Science and Technology (POSTECH), 2022, 2021
- Korean American Scientists and Engineers Association (KSEA), Young Investigator Grant (YIG), mail-in proposal review panel, 2019 – p
- The Chinese University of Hong Kong, General Research Fund/Early Career Scheme, mail-in proposal review panel, 2013
- The City University of New York Research Award Program (PSC-CUNY), mail-in proposal review panel, 2011

Symposium Organizer

35. EUV Focus Topic Symposium Committee, AVS 72nd International Symposium and Exhibition, Nov. 2026, Pittsburgh, PA,
34. Organizing Chair, "Advances in Emerging Electronic Nanomaterials" Symposium, MS&T 2026, October 2026, Pittsburgh PA
33. International Advisory Board, Korean ALD (KALD) Workshop 2026, Seoul, South Korea, April 2026.
32. Program Committee, ALD 2026 (26th International Conference on Atomic Layer Deposition), Tampa, FL, June 2026.
31. Chair, NSLS-II & CFN Users' Meeting Workshop "Building a U.S. EUV Research Ecosystem: Community Drivers for a Dedicated NSLS-II EUV Beamline Capabilities," April 2026, Upton NY
30. Chair, BNL-U. Albany EUV Materials Workshop, December 2025, Upton NY
29. Co-chair, Materials Science and Engineering Symposium, UKC 2025, August 2025, Atlanta GA
28. Program Committee, ALD 2025 (25th Conference on Atomic Layer Deposition), June 2025, Jeju, South Korea
27. Organizing Chair, Organizing Chair, "Advances in Emerging Electronic Nanomaterials: Towards Next-Generation Microelectronics" Symposium, MS&T 2024, October 2024, Pittsburgh PA
26. Organizing Chair, Materials Science and Engineering Symposium, UKC 2024, August 2024, San Fransisco CA
25. Program Committee, ALD 2024 (24th Conference on Atomic Layer Deposition), August 2024, Helsinki, Finland
24. Workshop Co-Organizer, Atomic Layer Infiltration and Deposition for Functional Hybrid Materials 2023 Workshop, September 2023, Technion – Israel Institute of Technology, Haifa, Israel
23. Conference Program Chair, UKC 2023, August 2023, Dallas / Fort Worth TX
22. Organizing Co-Chair, Materials Science and Engineering Symposium, UKC 2023, August 2023, Dallas / Fort Worth TX
21. Program Committee, ALD 2023 (23rd Conference on Atomic Layer Deposition), July 2023, Bellevue WA
20. Organizing Chair, "Advances in Emerging Electronic Nanomaterials: Synthesis, Enhanced Properties, Integration, and Applications2011" Symposium, MS&T 2022, October 2022, Pittsburgh PA
19. Organizing Chair, Materials Science and Engineering Symposium, UKC 2022, August 2022, Arlington VA
18. Organizing Chair, "Advanced Metrology Needs for Addressing Critical Microelectronics Challenges" Workshop, 2022 NSLS-II & CFN Joint Users' Meeting, May 2022, Upton NY (virtual)
17. Organizing Chair, Materials Science and Engineering Symposium, UKC 2021, December 2021, Garden Grove CA
16. Co-Organizer, SIS 2020 Workshop, December 2020, Virtual
15. Organizer, Symposium on Advances in Synthesis and Integration Methods for Enhanced Properties, and Applications in Emerging Nanomaterials, MS&T 2020, November 2020, Virtual
14. Organizing Chair, Materials Science and Engineering Symposium, UKC 2020, December 2020, Virtual
13. Organizing Chair, Materials Science and Engineering Symposium, UKC 2019, August 2019, Rosemont IL

12. Organizer, 2019 Functional Nanomaterials Symposium, TMS 2019, San Antonio TX
11. Co-Organizer, Next Generation Semiconductor Materials Symposium, IUMRS-ICEM 2018, August 2018, Daejon, South Korea
10. Co-Organizer, Materials Science and Engineering Symposium, UKC 2018, August 2018, New York NY
9. Program Committee, ALD 2018, July 2018, Inchon, South Korea
8. Co-Organizer, 2018 Functional Nanomaterials Symposium, TMS 2018, March 2018, Phoenix AZ
7. Co-Organizer, 2017 Functional Nanomaterials Symposium, TMS 2017, Feb. 2017, San Diego CA
6. Co-Organizer, International Symposium on Science and Technology of 2D Materials, Feb. 2017, University of Central Florida, Orlando FL
5. Co-Organizer, Workshop on "Two-Dimensional van der Waals Semiconductors for Energy Conversion Applications", 2016 NSLS-II & CFN Joint Users' Meeting, Upton NY
4. Technical Review Committee, 2015 – 2020, TechConnect Nanotech Conference
3. International Advisory Committee, 2015 – 2016, International Conference on Advances in Functional Materials (AFM)
2. Co-Organizer, Symposium K on "Hierarchically Structured Materials for Energy Conversion and Storage", 2012 MRS Fall Meeting, November 2012, Boston MA
1. Organizing Chair, MRS-Joint Symposium on "Ion Beam and Nanomaterials", XVIII International Materials Research Congress (IMRC), August 2009, Cancún, Mexico

K-12 Outreach

- Co-Organizer, Annual Math and Science Olympiad, Korea-American Scientists and Engineers Association NY Metropolitan Chapter, Queens NY (2010 – p)
- Guest lectures at Research Scholar Program for High School Students, Garcia Center for Polymers at Engineered Interfaces, Stony Brook University (2014 – p)

Journal Article Reviewer

Advanced Materials, Advanced Electronic Materials, Advanced Functional Materials, Advanced Energy Materials, Advanced Optical Materials, Advanced Materials Interfaces, Advanced Intelligent Systems, ChemCatChem, Physica Status Solidi, Nano Letters, ACS Nano, ACS Applied Materials & Interfaces, ACS Applied Nano Materials, ACS Applied Polymer Materials, Macromolecules, ACS Sustainable Chemistry & Engineering, Chemistry of Materials, ACS Energy Letters, ACS Omega, Langmuir, Journal of Physical Chemistry, Nanoscale, RSC Advances, Journal of Materials Chemistry, PCCP, ChemPhysChem, ChemCom, Industrial Chemistry & Materials, Organic Electronics, Applied Physics Letters, Journal of Applied Physics, AIP Advances, Journal of Vacuum Science and Technology A, Journal of Vacuum Science and Technology B**,** Nanotechnology, Scientific Reports, Nature Reviews Chemistry, Journal of Micro/Nanopatterning, Materials, and Metrology, Proceedings of the National Academy of Sciences (PNAS)

Professional Society Affiliation

- The Minerals, Metals and Materials Society (TMS)
  - Functional Materials Division (FMD): Council Nominations & Awards Committee Member (2021 – 2022)
  - FMD Nanomaterials Committee: Elected Committee Chair (2023 – 2025), Vice Chair (2021 – 2023), Secretary (2019 – 2021), *JOM* advisor (2017 – 2019), and Committee Member (2016 – p)
  - FMD Ad-Hoc Awards Nominations Committee Member (2026 – p)
- Materials Research Society (MRS)
- American Vacuum Society (AVS)
- The International Society for Optics and Photonics (SPIE)
- Korean American Scientists and Engineers Association (KSEA)
  - President, Korean American Materials Society (KAMS) (2024 – p)
  - Elected Technical Group Councilor, Materials Science and Engineering (2021 – 2024)
  - Treasurer, then Auditor of New York Metropolitan Chapter (2010 – 2018)

Course Development/Teaching

- ESM 542, Modern Electron Microscopy, 3-credit graduate course, Stony Brook University, Department of Materials Science and Chemical Engineering (2017 – p)
- ECE 618-853, Renewable Energy Systems, 3-credit online graduate course, New Jersey Institute of Technology (NJIT), Department of Electrical & Computer Engineering (2019 – 2022)

Supervision/Mentoring

- *CFN's ENM group Scientific and Technical Staff* (2025 – p): Ming Lu, Nikhil Tiwale, Gwen Wright (retired in July 2026), Clay Watson
- *Postdocs (13)*: Anton Kylylenko, 2026 – p; Juntae Jang, 2025 –2026, currently Process Engineer at SK Hynix; Dong Hyun Lee, 2025 – p; Hwan Oh, 2024 – p; Seunghoon Yang, 2022 – 2026, currently Senior Processor Engineer at ASM; Zhitian Shi, 2025 – 2026, currently Associate Professor at Southeast University in China; Xinpei Wu, 2024 – 2026, currently Process Engineer at Applied Optoelectronics Inc.; Istiaque Chowdhury, 2024 – 2025, currently Process Engineer at Veeco; Wonil Lee, 2025 – 2026, currently Process Engineer at Applied Materials; Dongsung Park, 2023 – 2025, currently postdoc at U.C. Berkeley;

Nikhil Tiwale, 2018 – 2021, currently Staff Scientist at CFN, BNL; Son Hoang, 2013 – 2014, currently Senior Data Scientist at EMD Electronics / Intermolecular; Mingfeng Wang, 2012, currently Associate Professor, Chinese University of Hong Kong

- *Ph.D. (11)*: Elliott Chiang, (Stony Brook U., Mater. Sci. Chem. Eng.), 2026 – p; Shixian Ha (Stony Brook U., Mater. Sci. Chem. Eng.), 2023 – p; Wonil Lee (Stony Brook U., Mater. Sci. Chem. Eng.), 2020 – 2025; Yifan Yin (Stony Brook U., Mater. Sci. Chem. Eng.), 2019 – 2023, currently Process Engineer at First Solar; Dan Le, DOE SCGSR (Univ. Texas at Dallas, Mater. Sci. Chem. Eng.), 2022; Ashwanth Subramanian (Stony Brook U., Mater. Sci. Chem. Eng.), 2018 – 2022, currently Senior Scientist at A*STAR in Singapore; Sayantani Sikder (Stony Brook U., Mater. Sci. Chem. Eng.), 2019 – 2021; William Serrano-Garcia, Visiting Ph.D. student (U. South Florida), 2018 – 2019; Lei Wang (Stony Brook U., Mater. Sci. Chem. Eng.), 2016 – 2017; Chang-Yeol Cho, Visiting Ph.D. student (Sogang U., Korea), 2012 – 2013, currently Researcher at KRICT
- *M.S. (6)*: Melina Lin (Stony Brook U., Mater. Sci. Chem. Eng.), 2025 – 2026, currently process engineer at Applied Materials; Matthew Yen (Stony Brook U., Mater. Sci. Chem. Eng.), 2023 – 2024, currently process engineer at Applied Materials; Kushal Kumar Iyyapareddy (Stony Brook U., Mech. Eng.), 2023 – 2024; Ashwanth Subramanian (Stony Brook U., Mater. Sci. Chem. Eng.), 2017 – 2018; Sulman Khan (Stony Brook U., Mater. Sci. Chem. Eng.), 2017; Xinyi Ye (Stony Brook U., Mater. Sci. Chem. Eng.), 2016 – 2017
- *Undergraduate (10)*: Michael Lotwin (Stony Brook U., Mater. Sci. Chem. Eng.), 2026 – p; Reid Maggio (Stony Brook U., Mater. Sci. Chem. Eng.), 2024 – 2026; Melina Lin (Stony Brook U., Mater. Sci. Chem. Eng.), 2023; Bryan Seo (Stony Brook U., Mater. Sci. Chem. Eng.), 2023 – 2024; Matthew Yen (Stony Brook U., Mater. Sci. Chem. Eng.), 2023; Shi Ying Zheng (Stony Brook U., Mater. Sci. Chem. Eng.), 2023; Brandon Yalin (Stony Brook U., Physics), 2016 – 2018, currently Research Engineer at NSLS-II, BNL; James Townley, Summer Undergrad Laboratory Intern (Univ. Penn., Mater. Sci. Eng.), 2016; Hugh Bullen (Stony Brook U., Mater. Sci. Chem. Eng.), 2012 – 2014, currently Process Engineer at Intel; Jovan Kamcev (Stony Brook U., Mater. Sci. Chem. Eng.), 2011 – 2012, currently Associate Professor at Univ. Michigan Ann Arbor, Chem. Eng.
- *Visiting Faculty/Scientists (4)*: Kyo Seon Hwang (Associate Processor, Kyung Hee Univ.), 2023 – 2024; Wonyoung Chang (Principal Research Scientist, Korea Inst. Sci. Tech. (KIST)), 2023 – 2024; Squib Ahmed, Visiting Faculty (Assistant Professor, SUNY Buffalo State Univ.), 2021 – 2022; Mohammad Sohel, Visiting Faculty (Associate Professor, CUNY Hostos Community College), Summer 2014; Yongwoo Kwon, Visiting Faculty (Professor, Hongik University), Summer 2019
- *Ph.D. Dissertation Committee (23), Stony Brook Univ., Mater. Sci. Chem. Eng.*: Yifan Yin, 2021 – 2023; Ashwanth Subramanian, 2019 – 2022; Yuchen Zhou, 2021; Chenyu Zhou, 2021 – 2022; Jia-Shiang Chen, 2020; Yixin Xu, 2019; Jiajie Cen, 2019; Shuhao Zhang, 2017 – 2020; Zhenhua Yang, 2016 – 2017; Danhua Yan, 2016 – 2017; Mani Sen, 2017; Hongfei Li, 2016; Levent Sandogdular, 2013 – 2016; Cheng Pan, 2010 – 2013; *Mechanical Eng.*: Yiting Zhang, 2026 – p; Seungkuk Kuk, 2020 – 2021; Zhen Wang, 2020; *Dept. Chemistry*: Deokkyu Choi, 2021; Amanda Carr, 2020; *Univ. South Florida, School of Eng.*: William Serano-Garcia, 2021; *Univ. Connecticut, Dept. Mater. Sci. Eng.*: Zhongyuan Li, 2022 – 2024; *Univ. Texas at Dallas, Dept. Mater. Sci. Eng.*: Dan Le, 2022 – 2024; Jinhyun Kim, 2023 – 2025

Full List of Publications

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