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[Google Scholar](#), [ORCID](#), [SCOPUS](#), [Publons](#), [ResearchGate](#)

<http://www.OKSMARTLAB.com>

Associate Professor

Department of Mechanical and Automotive Engineering (기계·자동차공학과)

Department of Manufacturing Technology Convergence (생산기술융합공학과)

Semiconductor Convergence Engineering Program (반도체융합공학전공)

Research Institute of Green Automobile Technology (친환경자동차기술연구소)

Research Center for Advanced Semiconductor Packaging (첨단반도체패키징연구소)

Research Center for Future Defense Technology (미래국방 R&D 연구소)

Seoul National University of Science and Technology (서울과학기술대학교)

RESEARCH INTERESTS

- **Semiconductor Processes, Instruments, and Materials:** physical/chemical vapor deposition, lithography, and other scalable nanofabrication processes; synthesis of metal oxide, carbon (carbon nanotube (CNT), *etc.*), and other semiconductor materials; design and build-up of semiconductor processing equipment; microelectrode array; heat management; EUV lithography pellicle; optoelectronic, optomechanical, and neurosignal transducers
- **S.M.A.R.T. (Scalable, Mechanical, Agile, Reproducible, Thrifty) Precision Patterning and Machining:** free-surface dynamic nanoinscribing; mold-free vibrational patterning; metal forming and shaping; continuous roll-to-roll process; large-area imprinting/printing; display panels; electronic, photonic, and vehicle components; diffractive optical elements; heat management; functional surfaces
- **Supercapattery (Supercapacitor + Battery) and High-Entropy Materials Devices:** design, fabrication, and optimization of metal/semiconductor/carbon-based electrochemical electrode materials; high-performance supercapacitors; secondary and all-solid-state batteries; supercapattery devices; high-entropy materials-based energy storage systems for extreme environment; mechanical, electrochemical, and optoelectronic energy transducers
- **AI-assisted Smart Design and Manufacturing:** smart and optimal design based on AI, deep learning, and machine learning methodologies; development and optimization of manufacturing processes; thermal, structural, fluid, and other mechanistic modeling and simulation; semiconductor inspection; semiconductor packaging; design and synthesis of high-entropy materials and alloys; aerospace components and systems

EDUCATION

University of Michigan

Ph.D., Mechanical Engineering

Ann Arbor, MI, USA

Sep 2007 – Apr 2013

Thesis: Functional Hybrid Nanoarchitectures and Scalable Nanomanufacturing Technologies
for Energy Conversion and Optoelectronics

(<https://deepblue.lib.umich.edu/handle/2027.42/97820>)

Advisors: Prof. L. Jay Guo, Prof. A. John Hart

Seoul National University Seoul, Korea
M.S., Mechanical and Aerospace Engineering Sep 2005 – Aug 2007
Thesis: Electrical Discharge Machining of Carbon Nanomaterials:
A Study on the Machining Characteristics and the Advanced Field Emission Applications
(<https://s-space.snu.ac.kr/handle/10371/48169>)
Advisor: Prof. Yong Hyup Kim

Seoul National University Seoul, Korea
B.S., Mechanical and Aerospace Engineering Mar 1998 – Feb 2002
Graduation project (voluntary): Design and Manufacturing of a Rotary Wing-type Micro Air Vehicle (MAV)

EMPLOYMENT

Seoul National University of Science and Technology (SEOULTECH) Seoul, Korea
Professor, Department of Mechanical and Automotive Engineering Oct 2025 – present
Associate Professor, Department of Mechanical and Automotive Engineering Oct 2020 – Sep 2025
Assistant Professor, Department of Mechanical and Automotive Engineering Sep 2014 – Sep 2020

Korea Institute of Science and Technology (KIST) Seoul, Korea
Visiting Scholar, Brain Science Institute; Center for Biomaterials Mar 2024 – Feb 2025

Samsung Advanced Institute of Technology, Samsung Electronics, Co., Ltd. Suwon, Gyeonggi, Korea
Research Staff, Imaging Device Lab, Device & System Research Center Dec 2013 – Aug 2014

University of Michigan Ann Arbor, MI, USA
Research Fellow, Department of Electrical Engineering and Computer Science May 2013 – Oct 2013
Research Assistant, Department of Mechanical Engineering Sep 2008 – Apr 2013
College Regents Fellow, Department of Mechanical Engineering Sep 2007 – Aug 2008

Seoul National University Seoul, Korea
Research Assistant, Department of Mechanical and Aerospace Engineering Sep 2005 – Aug 2007

ADA Infotech, Co., Ltd. Goyang, Gyeonggi, Korea
Assistant Manager, System Engineer, Technical Consultant, Technical Department Aug 2003 – Apr 2005

NuriInfos, Co., Ltd. Seongnam, Gyeonggi, Korea
Solution Engineer, Solution Business Department Apr 2002 – Aug 2003
Intern Programmer Jan 2002 – Mar 2002

Official certification: *Information Processing Engineer*, Human Resources Development Service of Korea (Oct 2001).

AWARDS

Nano Young Challenge 2024 , Korea Nano Technology Research Society	2024
KSME-SEMES Open Innovation Challenge , Korean Society of Mechanical Engineers	2024
KSME-LG Future Home Tech. Challenge , Korean Society of Mechanical Engineers	2024
LINC 3.0 Industry-Academia Collaboration; Best Project Award (최우수상), SEOULTECH	2024
IJPEM-GT Contribution Award , Korean Society of Precision Engineering	2023
KSME-LG Future Home Tech. Challenge , Korean Society of Mechanical Engineers	2023
Micro/Nanoengineering Creation & Innovation Award , Korean Society of Mechanical Engineers	2021
KSME-SEMES Open Innovation Challenge; Silver Medal , Korean Society of Mechanical Engineers	2019
Precision Engineering Creativity Competition; Bronze Medal	2019
Korean Society of Precision Engineering	

KSME-SEMES Open Innovation Challenge; Gold Medal , Korean Society of Mechanical Engineers	2018
Young Researcher Award (electing only 1 per year), Society of Micro and Nano Systems	2018
KSMTE Young Engineers Award , Ministry of Trade, Industry and Energy; Korean Society of Manufacturing Technology Engineers	2017
KSMTE Young Engineers Award , Ministry of Trade, Industry and Energy; Korean Society of Manufacturing Technology Engineers	2016
Precision Engineering Creativity Competition; Silver Medal Hyundai Wia, Co., Ltd.; Korean Society of Precision Engineering	2016
‘Inside Edge’ International Thesis Competition; Bronze Medal Samsung Electro-Mechanics, Co., Ltd.	2013
College Regents Fellowship , University of Michigan	2007–2008
Graduate Student Best Paper Award (electing only 1 per year), Seoul National University	2008
Other Conference Presentation Awards	
Best Paper Awards (3 times), Korean Institute of Electrical and Electronic Material Engineers	2025
Best Paper Award, Korean Society for Precision Engineering	2025
Best Capstone Design Award, Korean Society of Manufacturing Process Engineers	2025
Innovative Capstone Design Award, Korean Society of Manufacturing Process Engineers	2025
Best Paper Award, Korean Society for Composite Materials	2025
Best Paper Award, Society of Micro and Nano Systems (2 times)	2025
Best Paper Award, LINC 3.0 Capstone Design Olympiad, Korean Ceramic Society (KCerS)	2024
Best Paper Award, Korean Institute of Electrical and Electronic Material Engineers	2024
Best Poster Presentation Award, Int. Conference on Adv. Funct. Materials & Devices (AFMD 2024) Nanotechnology Research Centre (NRC) & SRM Institute of Science and Technology	2024
Certificate of Best Paper, International Symposium on Micro and Nano Manufacturing (ISMNM 2023) Korean Society of Manufacturing Technology Engineers	2023
Best Paper Presentation Award, Korean Society of Manufacturing Technology Engineer	2023
Best Paper Award, Society of Micro and Nano Systems (2 times)	2023
Poster Award, IUMRS-ICAM & ICMAT 2023, Materials Research Society (Singapore)	2023
Best Paper Award, Korean Society of Manufacturing Process Engineers	2022
Best Paper Award, Society of Micro and Nano Systems	2022
Best Paper Award, Korean Institute of Electrical and Electronic Material Engineers	2022
Best Paper Awards (2 times), Korean Institute of Electrical and Electronic Material Engineers	2022
Best Paper Award, Korean Society of Manufacturing Process Engineers	2022
Best Student Paper Award, NASCENT (https://nascent.utexas.edu)/NSF (USA)	2021
Best Paper Presentation Award (Fall), Korean Society of Manufacturing Technology Engineer	2021
Best Paper Presentation Award (Fall), Korean Society of Manufacturing Process Engineers	2021
Best Poster Awards (3 times), Society of Micro and Nano Systems	2021
Best Paper Presentation Award (Spring), Korean Society of Manufacturing Technology Engineer	2021
Best Paper Presentation Award (Spring), Korean Society of Manufacturing Process Engineers	2021
Best Paper Presentation Award, Korean Society of Manufacturing Process Engineers	2020
Best Paper Presentation Award, Korean Society of Manufacturing Technology Engineer	2020
Best Paper Presentation Award, Korean Society of Manufacturing Technology Engineer	2019
Best Paper Presentation Award, Korean Society of Manufacturing Process Engineers	2019
Best Poster Award, Silver Medal, Nano Korea	2019

Best Poster Award, Korean Society of Mechanical Engineers	2019
Best Poster Award, 8 th nano-Imprint·Molding·Print Forum	2019
Best Poster Award, Korean Society of Manufacturing Process Engineers	2018
Best Presentation Award, Korean Society of Manufacturing Technology Engineers	2018
Best Poster Award, Nano Korea	2018
Best Poster Award, Korean Society of Mechanical Engineers	2018
Best Presentation Award, Korean Society of Manufacturing Technology Engineers	2018
Best Poster Award, 16 th Int. Conference on Nanoimprint and Nanoprint Technology (NNT)	2017
Excellent Thesis Award, Conference of the Next Generation Lithography	2017
Best Poster Award, Nano Convergence Conference	2017
Best Poster Award, 6 th nano-Imprint·Molding·Print Forum	2017
Capstone Design Contest; Idea Award, Int. Conference & Exhibition for Nanotechnology (NANOPIA)	2016
Capstone Design Contest; Participation Award, Korean Society of Manufacturing Process Engineers	2016
Best Poster Award, 5 th nano-Imprint·Molding·Print Forum	2016

Student Awards

Engineering Graduate Symposium; 2 nd -place Award in Nanomaterials, University of Michigan	2009
Brain Korea 21 Scholarship, Seoul National University	2007
Work-Study Scholarship, 3 times, Seoul National University	2005–2007
Superior Academic Performance Scholarship, 2 times, Seoul National University	2000, 2001
Anticommunism Campaign Poster Award, Seoul Dongdaemun Metropolitan Police Agency	1995

JOURNAL PUBLICATIONS (*Corresponding author / ‡Equal contribution)

In Preparation (with tentative title and authors)

- .* K. Kim‡, Y. T. Kim‡, J. S. Lee, M. Kim, and **J. G. Ok**, Deep learning and thermal fluid-structure interaction analysis for optimizing the catalyst geometry and morphology for reliable chemical vapor deposition of nanomaterials.
- .* Y. T. Kim, J. S. Lee, and **J. G. Ok**, Real-time optimization of device-side carrier debonding process parameters using physics-informed neural network with transfer learning.
- .* R. S. Ingole, S. L. Kadam, M. Kim, K. Kim, Y. T. Kim, S. Ko, M. Lee, J. S. Lee, and **J. G. Ok**, Design and low-temperature fabrication of high-entropy sulfides for extreme environment-applicable electrochemical energy storages.
- .* S. L. Kadam, R. S. Ingole, Y. T. Kim, J. S. Lee, K. Kim, M. Kim, S. Ko, M. Lee, and **J. G. Ok**, Rational design and scalable synthesis of high-entropy nitride ceramics with tunable electrochemical properties for high-performance energy storages operable in extreme environment.
- .* B. Kang‡, K. Kim‡, J. Gu‡, J. Ahn, Y. Jeong, J.-H. Ha, S. Jeon, S. Hwang, B.-H. Kang, J. Ahn, J.-A. Choi, M. Kim, J.-H. Jeong, **J. G. Ok**, and I. Park, Direction-aware piezo-transmittance strain sensor based on engineererd alignment of carbon nanotubes.
- .* Y. T. Kim, J. S. Lee, and **J. G. Ok**, Machine learning-based shape and location prediction of high bandwidth memory-applicable through glass via arrays with multi-objective optimization of thermal deformation and stress.

To be submitted (journals invited or targeted)

- 117.* S. L. Kadam‡, Y. T. Kim‡, R. S. Ingole‡, J. S. Lee, M. Lee, S. Ko, J. Lee, S. S. Dhasade, S. B. Kulkarni, and **J. G. Ok**, Engineering cobalt oxide nanostructures: Tailoring deposition parameters and employing machine learning for supercapacitor performance prediction, to be submitted to *Small*.

- 116.* R. S. Ingole, S. L. Kadam, K. Kim, M. Kim, M. Lee, S. Ko, and **J. G. Ok**, Ex-situ solvothermal synthesis of vanadium sulfide nanostructured electrode materials for electrochemical energy storage devices, to be submitted to *Advanced Sustainable Systems*.
- 115.* S. L. Kadam, R. S. Ingole, Y. T. Kim, J. S. Lee, K. Kim, M. Kim, and **J. G. Ok**, From lab to life: Progress in supercapacitor electrode materials for real-time electrochemical energy storage applications, to be submitted to *Small Structures*.
- 114.* K. Kim[‡], J. Park[‡], J. M. Park, and **J. G. Ok**, Domino-stacked CNT scaffold layered with piezoelectric material for highly efficient energy harvesting, to be submitted to *Nano Energy*.

Submitted/Under Review

- 113.* R. S. Ingole[‡], S. L. Kadam[‡], K. Kim, M. Kim, Y. T. Kim, J. S. Lee, and **J. G. Ok**, Facile and scalable synthesis of 2D RuO₂-decorated V₂O₅ nanostructures via non-aqueous spray pyrolysis for advanced energy storage, submitted to *Battery Energy*.
- 112.* R. S. Ingole[‡], S. L. Kadam[‡], G. T. Chavan, K. Kim, M. Kim, Y. T. Kim, J. S. Lee, S. Ko, M. Lee, and **J. G. Ok**, Tailored architecting of RuO₂-V₂O₅ nanocomposites via controlled spray pyrolysis for high-performance energy storage electrodes, submitted to *Advanced Sustainable Systems*.
- 111.* M. Kim, D. Lee, K. Kim, and **J. G. Ok**, Scissorable piezoelectric nanogenerators comprising flexible micrograting electrodes interconnected by laterally aligned ZnO nanowires for self-powering size-customizable devices, submitted to *Small*.
- 110.* S. L. Kadam, R. S. Ingole, K. Kim, M. Kim, Y. T. Kim, S. B. Kulkarni, and **J. G. Ok**, Ex-situ fabrication of flexible binder-free hybrid RGO-Co₃O₄ electrodes with controlled morphology for sustainable energy storage systems with high energy and power densities, submitted to *Ceramics International*.
- 109.* R. S. Ingole, S. L. Kadam, K. Kim, M. Kim, Y. T. Kim, J. S. Lee, and **J. G. Ok**, MXene-supported vanadium sulfide composites reinforced by tailored carbon nanotube networks for high-performance supercapattery, submitted to *Small*.
108. K. K. Park, P. Sang, M. G. Joo, H. Choi, **J. G. Ok**, D. Son, H. J. Park, and H. W. Baac, Multi-layered photoacoustic transmitters for direction-sensitive and location-specific strain sensing, submitted to *ACS Sensors*.
- 107.* M. Kim[‡], D. B. Sim[‡], Y. T. Kim[‡], B. H. Kim, and **J. G. Ok**, Direct scribing of metal microgratings using sawtoothed cemented carbide tools with Johnson-Cook model-based plastic deformation simulation, *Materials & Design*, under review.
- 106.* Y. T. Kim[‡], J. S. Lee[‡], M. Kim, Y.-D. Park, H. Youn, and **J. G. Ok**, Design optimization of printable attachable lenses with deep learning-based imaging resolution enhancement for visualizing microstructures in large areas, *Engineering Applications of Artificial Intelligence*, under review.
105. B. Goel, R. Kumar, S. Gangwar, V. Mishra, G. Singh, D. Lee, R. Sarepaka, and **J. G. Ok**, Comprehensive review of diamond tool wear in ultra-precision machining, *Surface Engineering*, under review.

Accepted/In Press

- 104.* H. Roh[‡], K. Kim[‡], C. Kim, M. (Minju) Kim, M. (Minwook) Kim, S. Sim, J. Kim, **J. G. Ok**, and M. Im, Polymer-incorporated mechanically compliant carbon nanotube microelectrode arrays for multichannel neural signal recording, *Advanced Functional Materials*, in press (Jun 2025).
<https://doi.org/10.1002/adfm.202509630>
103. J. Lee, Y. Lee, S. H. Shin, **J. G. Ok**, K. Park, and J. Y. Seok, Ultrafine edge-split copper oxide nanoneedles for high-energy, fast-charging lithium-ion capacitors, *Sustainable Materials and Technologies* **45**, e01498 (Oct 2025).
<https://doi.org/10.1016/j.susmat.2025.e01498>
- 102.* R. S. Ingole, K. Kim, M. Kim, Y. T. Kim, S. L. Kadam, J. Y. Seok, and **J. G. Ok**, One-pot hydrothermal synthesis of vanadium oxide-decorated carbon nanotube hybrid composite electrodes for superior supercapacitor applications, *Advanced Materials Technologies*, online published (May 2025).

FULLY ISSUED

- 101.* H. Kim[‡], I. Jung[‡], C. Kang[‡], D. Lim, S. Ju, D. Kim, J. H. Jung, **J. G. Ok**, J. Choi, and K.-T. Lee, Flexible ultrabroadband near-perfect absorber enabled by synergistic effects of cavity mode overlap and broadband anti-reflection, *Materials Today Nano* **30**, 100608 (Jun 2025).
<https://doi.org/10.1016/j.mtnano.2025.100608>
- 100.* D. Kim[‡], I. Jung[‡], S. Ju, C. Kang, D. Lim, M. Lee, **J. G. Ok**, H. J. Park, and K.-T. Lee, Optical interference control for selectively suppressing higher-order modes in all-dielectric tri-layered structures for reflective RGB colors, *Optics Letters* **50** (6), 1779-1782 (Mar 2025).
<https://doi.org/10.1364/OL.554347>
- 99.* J. Kim[‡], G. Choi[‡], S. Park, M. Kim, K. Kim, H.-S. Jung, M. K. Kwak, **J. G. Ok**, and H. E. Jeong, Smart mechanical structures and design for advanced adhesives: A Review, *International Journal of Precision Engineering and Manufacturing* **26** (3), 757-772 (Mar 2025).
<https://doi.org/10.1007/s12541-025-01211-y>
- 98.* I. Jung[‡], H. Kim[‡], D. Lim[‡], D. Kim, C. Kang, S. Ju, **J. G. Ok**, D. H. Park, and K.-T. Lee, Flexible transmissive colors with enhanced purity and brightness through overlapping multi-cavity resonances, *Optics Letters* **49** (24), 7214-7217 (Dec 2024).
<https://doi.org/10.1364/OL.543889>
- 97.* R. S. Ingole[‡], S. L. Kadam[‡], R. Kamat, **J. G. Ok**, and S. B. Kulkarni, Synthesis and electrochemical characterizations of RGO-decorated MnO₂ nanorods/carbon cloth-based wearable symmetric supercapacitors, *Surfaces and Interfaces* **52**, 104976 (Sep 2024).
<https://doi.org/10.1016/j.surfin.2024.104976>
- 96.* M. (Minwook) Kim[‡], H. Noh[‡], D. Jeong[‡], E. Jeong, G. Jo, M. (Mingyu) Kim, B. Youn, K. Kim, J. H. Seo, and **J. G. Ok**, A printable flexible and transparent heater applicable to arbitrary surfaces, fabricable by the soft-contact micropatterning of an ionic metal solution, *International Journal of Precision Engineering and Manufacturing—Green Technology* **11** (5), 1463-1473 (Sep 2024).
<https://doi.org/10.1007/s40684-024-00601-3>
- 95.* R. S. Ingole[‡], S. L. Kadam[‡], G. T. Chavan, S. B. Kulkarni, B. J. Lokhande, and **J. G. Ok**, Solvent-mediated spray pyrolysis of 2D vanadium oxide nanostructures for high-performance energy storage applications, *Electrochimica Acta* **498**, 144628 (Sep 2024).
<https://doi.org/10.1016/j.electacta.2024.144628>
- 94.* M. Seong[‡], C. Park[‡], J. Kim[‡], M. Kim, J. Song, H. N. Kim, **J. G. Ok**, and H. E. Jeong, Oxidation-resistant self-adhesive flexible transparent electrodes based on Ag-Au core-shell nanowires and heterogeneous microarchitectures, *Materials Today Nano* **27**, 100488 (Aug 2024).
<https://doi.org/10.1016/j.mtnano.2024.100488>
- 93.* R. S. Ingole[‡], S. L. Kadam[‡], N. G. Tiwari, U. T. Nakate, R. Mangiri, S. B. Kulkarni, B. J. Lokhande, and **J. G. Ok**, Hierarchically structured 3D nanoporous vanadium oxide transparent electrodes for next-generation supercapacitors, *Advanced Sustainable Systems* **8** (7), 2300535 (Jul 2024).
<https://doi.org/10.1002/adsu.202300535>
- 92.* I. Jung[‡], H. Kim[‡], S. Ju, D. Kim, H. Kwak, H. Wang, L. J. Guo, H. J. Park, **J. G. Ok**, and K.-T. Lee, Tailoring resonant modes in dual cavities for transmissive structural colors with high brightness and high purity, *Optics Express* **32** (15), 26136-26146 (Jul 2024).
<https://doi.org/10.1364/OE.528618>
- 91.* H. Kwak[‡], I. Jung[‡], D. Kim[‡], S. Ju, S. Choi, C. Kang, H. Kim, H. W. Baac, **J. G. Ok**, and K.-T. Lee, Resonant-mode engineering for additive reflective structural colors with high brightness and high color purity, *Scientific Reports* **14**, 13694 (Jun 2024).
<https://doi.org/10.1038/s41598-024-64176-4>
- 90.* U. Lee[‡], H. Kim[‡], D. K. Oh[‡], N. Lee[‡], J. (Jonggab) Park, J. (Jaewon) Park, H. Son, H. Noh, J. Rho, and

- J. G. Ok**, Azimuthal rotation-controlled nanoinscribing for continuous patterning of period- and shape-tunable asymmetric nanogratings, *Microsystems & Nanoengineering* **10**, 60 (May 2024).
<https://doi.org/10.1038/s41378-024-00687-4>
- 89.* T. Kim[‡], M. Kim[‡], J. Han, H. Jung, S. Lee, J. Kim, D. Lee, H. E. Jeong, and **J. G. Ok**, Mechanically processed, vacuum- and etch-free fabrication of metal-wire-embedded microtrenches interconnected by semiconductor nanowires for flexible bending-sensitive optoelectronic sensors, *Nanophotonics* **13** (7), 1141-1148 (Mar 2024).
<https://doi.org/10.1515/nanoph-2023-0667>
- 88.* H. Ji[‡], H. Son[‡], K. Kim[‡], G. Choi, M. Kim, I. Han, H. E. Jeong, and **J. G. Ok**, All-solution-based, low-to-room-temperature fabrication of position-controlled metal-nanodot-decorated semiconductor nanorods for enhanced optoelectronic transducers, *ACS Applied Nano Materials* **7** (5), 4692-4699 (Feb 2024).
<https://doi.org/10.1021/acsanm.3c05018>
87. S. Kadam[‡], R. Ingolet[‡], N. Tiwari, U. Nakate, Y. Nakate, R. Kamat, **J. G. Ok**, and S. Kulkarni, Facile synthesis of nanourchin like manganese oxide electrode material for high performance symmetric supercapacitor, *Surfaces and Interfaces* **42** (Part B), 103443 (Nov 2023).
<https://doi.org/10.1016/j.surfin.2023.103443>
- 86.* I. Han[‡], J. Song[‡], K. Kim[‡], H. Kim, H. Son, M. Kim, U. Lee, K. Choi, H. Ji, S. H. Lee, M. K. Kwak, and **J. G. Ok**, Demonstration of a roll-to-roll-configurable, all-solution-based progressive assembly of flexible transducer devices consisting of functional nanowires on micropatterned electrodes, *Scientific Reports* **13**, 11980 (Jul 2023).
<https://doi.org/10.1038/s41598-023-38635-3>
- 85.* I. Jung, H. Kim, S. Oh, H. Kwak, S. Ju, M. Kim, J. H. Jung, H. W. Baac, **J. G. Ok**, and K.-T. Lee, Understanding a spectral response in a metal-dielectric-metal cavity structure: The role of constituent metals, *Optics and Laser Technology* **158** (Part A), 108772 (Feb 2023).
<https://doi.org/10.1016/j.optlastec.2022.108772>
- 84.* J. Lee[‡], D. Go[‡], U. Lee, S. Lee, K. H. Kim, J. W. Shin, H. Kim, **J. G. Ok**, and J. An, High-performance nanostructured flexible capacitor by plasma-induced low-temperature atomic layer annealing, *Advanced Materials Technologies* **8** (1), 2201134 (Jan 2023).
<https://doi.org/10.1002/admt.202201134>
Front cover: <https://doi.org/10.1002/admt.202370001>
- 83.* C. H. Moon[‡], K.-S. Han[‡], M. Kim[‡], D. K. Oh[‡], S. Yi, T. Kim, H. Kim, J. Hwang, J.-G. Nam, D.-E. Lee, D.-Y. Lee, G. R. Jo, and **J. G. Ok**, Scaling up the sub-50 nm-resolution roll-to-roll nanoimprint lithography process via large-area tiling of flexible molds and uniform linear UV curing, *Journal of Mechanical Science and Technology* **37** (1), 271-278 (Jan 2023).
[http://doi.org/10.1007/s12206-022-1227-y](https://doi.org/10.1007/s12206-022-1227-y)
82. D. Biswas, J. Heo, P. Sang, P. Dey, K. Han, J. H. Ko, S. M. Won, D. Son, M. Suh, H. S. Kim, **J. G. Ok**, H. J. Park, and H. W. Baac, Micro-ultrasonic assessment of early-stage clot formation and whole blood coagulation using an all-optical ultrasound transducer and adaptive signal processing algorithm, *ACS Sensors* **7** (10), 2940-2950 (Oct 2022).
<https://doi.org/10.1021/acssensors.2c00875>
- 81.* M. (Minwook) Kim[‡], M. (Mingyu) Kim[‡], K. Kim[‡], Y. Lee, M. Park, B. Han, H. Noh, S. Hwang, S. H. Lee, and **J. G. Ok**, Solution-processable, Ag-sandwiched Nanotube-coated, Durable (SAND) architecture realizing anti-breaking cyclic heating on arbitrary substrates, *International Journal of Precision Engineering and Manufacturing—Green Technology* **9** (5), 1305-1315 (Sep 2022).
<https://doi.org/10.1007/s40684-021-00387-8>
- 80.* D.-Y. Lee, J.-G. Nam, K.-S. Han, Y.-J. Yeo, U. Lee, S.-H. Cho, and **J. G. Ok**, Taguchi method-optimized roll nanoimprinted polarizer integration in high-brightness display, *Advances in Nano Research* **13** (2), 199-206 (Aug 2022).

- <https://doi.org/10.12989/anr.2022.13.2.199>
79. J. (Joohoon) Kim[‡], D. K. Oh[‡], H. Kim, G. Yoon, C. Jung, J. (Jaekyung) Kim, T. Badloe, H. Kang, S. Kim, Y. Yang, J. Lee, B. Ko, **J. G. Ok**, and J. Rho, Metasurface holography reaching the highest efficiency limit in the visible via one-step nanoparticle-embedded-resin printing, *Laser & Photonics Reviews* **16** (8) 2200098 (Aug 2022).
<https://doi.org/10.1002/lpor.202200098>
 78. H.-K. Na, C.-H. Yoo, J.-K. Choi, **J. G. Ok**, C.-H. Chung, and J.-S. Wi, Nanoplasmonic sensor chip readable in a conventional plate reader, *BioChip Journal* **16** (2), 191-196 (Jun 2022).
<https://doi.org/10.1007/s13206-022-00059-y>
 - 77.* M. Kim[‡], D. K. Oh[‡], J. D. Kim[‡], M. Jeong, H. Kim, C. Jung, J. Song, W. Lee, J. Rho, and **J. G. Ok**, Facile fabrication of stretchable photonic Ag nanostructures by soft-contact patterning of ionic Ag solution coatings, *Nanophotonics* **11** (11), 2693-2700 (Jun 2022).
<https://doi.org/10.1515/nanoph-2021-0812>
 - 76.* J. D. Kim[‡], H. Choi[‡], K. Kim[‡], H. Chae[‡], H. Yi, M. H. Jeong, N. Lee, M. Lee, M. C. Kim, J. W. Suk, K.-T. Lee, H. E. Jeong, and **J. G. Ok**, Ionic solution-processable Ag nanostructures with tunable optical and electrical properties and strong adhesion to general substrates, *Applied Materials Today* **27**, 101475 (Jun 2022).
<https://doi.org/10.1016/j.apmt.2022.101475>
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TECHNOLOGY TRANSFERS

3. 반도체 등 정밀부품 검사용 탈부착형 렌즈의 맞춤형 설계 및 제작 기술 일부 (Part pf customized design and manufacturing technology for detachable lenses for inspection of precision components such as semiconductors) a to Small Machines, Co., Ltd., KRW 9,900,000, Dec 23, 2024.
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PROJECTS (not listed intramural and < KRW 5,000,000 grants: full list available upon request)

37. *Machine Learning-Guided Modeling and Synthesis Engineering of Two-Dimensional High-Entropy Ceramic Materials for Space Energy Storage Applications*: supported by the **해외우수과학자유치사업(Brain Pool)** through the **National Research Foundation of Korea (NRF)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. RS-2024-00446836), Oct 2024 – Dec 2026.
36. *Laboratory for Biomimetic Formation of Thrombi/Emboli and Its Mechanism*: supported by the **기초연구실(심화형)** through the **National Research Foundation of Korea (NRF)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. RS-2024-00413607), Aug 2024 – Apr 2027.
35. *Nanopore-based ultra-sensitive multi-mode digital sensor system for single-molecule omics analysis*: supported by the **나노및소재기술개발사업/나노미래소재원천기술개발[선도형]** through the **National Research Foundation of Korea (NRF)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. RS-2024-00449882), Jul 2024 – Dec 2028.
34. *Development of CNT pellicles for advanced EUV lithography*: supported by an industry-academia collaboration grant as a part of **Leaders in Industry-university Cooperation (LINC 3.0) Program** funded by the **National Research Foundation of Korea (NRF)**, May 2024 – Nov 2024.
33. *Development of DSTB/DSL D Process/Equipment for Temporary Bonding/Debonding of Ultra-Thin Wafer*: supported by the **반도체첨단패키징핵심기술개발사업** through the **National Research Foundation of**

- Korea (NRF)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. RS-2024-00432928), Apr 2024 – Dec 2028.
32. *Advancement and Commercialization of IP for Diffraction Optical Component Business in High-Resolution Semiconductor Inspection Equipment Leveraging Precision Pattern Processing Technology*: supported by the **대학기술 경영촉진사업 (IP 스타과학자지원형)** through the **Commercializations Promotion Agency for R&D Outcomes (COMPA)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. RS-2024-00425007), Apr 2024 – Dec 2025.
 31. *Development of diffractive optical elements for robot eyes by nanoimprint lithography*: supported by the industry-academia collaboration grant as a part of **Leaders in Industry-university Cooperation (LINC 3.0) Program** funded by the **National Research Foundation of Korea (NRF)**, Jul 2023 – Dec 2023.
 30. **가전용 금속 응결방지/방오/자가세정 기능성 표면 기술 개발** (미래가전 차별화 기초소재 및 표면기술 개발): supported by the industry-academia collaboration grant (based on *Green Advanced Materials & Surface Nanotechnology Research Center* at Yonsei University) from **Samsung Electronics, Co., Ltd. (삼성전자)**, Apr 2022 – Mar 2023.
 29. *Development of light source collimation nanopatterned lens for small live cell monitoring platform*: supported by the **기업부설연구소 R&D 역량강화 지원사업** through the **Korea Industrial Technology Association (KOITA)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. KOITA-RND3-2-2022-02-01), Jul 2022 – Dec 2024.
 28. *Human-hybridized eco-friendly energy device inspired by an excitable cell*: supported by the **STEAM Research Program (미래융합기술파이오니어)** through the **National Research Foundation of Korea (NRF)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. 2022M3C1A3081178), Jun 2022 – Dec 2026.
 27. *Development of High-throughput Free-surface-applicable Shape-tunable Micro-nanopatterning Technology based on Mechanical Machining Principles*: supported by the **Protective Research Program (보호연구)** through the **National Research Foundation of Korea (NRF)** grant funded by the Korean Government (**Ministry of Education**) (No. 2022R1I1A2073224), Jun 2022 – May 2027.
 26. *Development of Diffractive Optical Elements for Digital Conversion of Domestic Completed Blood Cell Analyzer*: supported by the **Performance Advancement & Foundation Construction for Research Equipment (연구장비활용연구)** program through the **Commercializations Promotion Agency for R&D Outcomes (COMPA)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. 2022-URE-09), May 2022 – Dec 2022.
 25. **Epoxy 및 ACF 생산 관련 모니터링 및 해석기술 개발**, supported by the industry-academia collaboration grant from **Kukdo Chemical Co., Ltd. (국도화학)**, Nov 2020 – Oct 2021.
 24. *Mass-customized manufacturing of micro-biomolecule diagnostic sensors*: supported by the “da Vinci Lab-Village Project” grant as a part of the **University Innovation Program** funded by the Korean Government (**Ministry of Education**), Oct 2021 – Jan 2022.
 23. *Integration of carbon nanotube absorbent and nanopattern in gas chromatography sensors*: supported by the divisional grant as a part of the **National Research Foundation of Korea (NRF)** grant (**나노및소재기술개발사업 / 국가핵심소재연구단[플랫폼형]**), *Development of nano and sensor materials for monitoring environmental air pollutants*, funded by the Korean Government (**Ministry of Science and ICT**) (No. 2021M3H4A3A02099204), Sep 2021 – Dec 2025.
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- electrodes therein, towards reattachable heavy-duty devices*: supported by the **Basic Research Program (기본연구)** through the **National Research Foundation of Korea (NRF)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. 2020R1F1A1073760), Jun 2020 – Feb 2023.
20. *Scalable manufacturing of localized surface plasmon resonance (LSPR)-generating nanopattern templates for practical biomolecule detectors*: supported by the “da Vinci Lab-Village Project” grant as a part of the **University Innovation Program** funded by the Korean Government (**Ministry of Education**), Sep 2019 – Dec 2019.
 19. *Utilization of roll-to-roll and other continuous nanopatterning technologies for scalable and commercial LSPR sensor manufacturing*: supported by the divisional grant (No. 2019K000591) as a part of the **Commercializations Promotion Agency for R&D Outcomes (COMPA)** grant (**연구산업육성사업(미래연구서비스개발지원)**), *Micro/Nano-fluidics technology for service platform of diagnostic sensor manufacturing*, funded by the Korean Government (**Ministry of Science and ICT**) (No. 2019K000588), Jul 2019 – Dec 2021.
 18. *Cloud-based smart energy town platform integrating energy-blocks*: supported by the **Basic Science Research Program (대학중점연구소)** through the **National Research Foundation of Korea (NRF)** funded by the Korean Government (**Ministry of Education**) (No. 2019R1A6A1A03032119), Jun 2019 – Feb 2022.
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 13. *Development of the wearable light-emitting diode patches for low-power-consumption optical therapy*: supported by the collaborative commercializing promotion grant as a part of **NEXT4U BRIDGE Program** funded by the Korean Government (**Ministry of Education**), Sep 2017 – Jan 2018.
 12. *Development of a hemispherical RMC operation system for spatial radiation imaging*: supported by the commissioned research grant (No. 2016M2A2A4A01952665) as a part of the **National Research Foundation of Korea (NRF)** grant, *Development of Rotational Modulation Gamma-ray Imager Based on Room-Temperature Semiconductor Detectors*, funded by the Korean Government (**Ministry of Science, ICT and Future Planning**) (No. 2015M2A2A4A01045225), Aug 2017 – Jul 2018.
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8. *Development of ultrahigh-responsivity flexible photodetectors based on multi-dimensional hybrid nanoarchitectures comprising zinc oxide nanowires and nanoscale thin-films*: supported by the **Young Researcher Program (신진연구)** through the **National Research Foundation of Korea (NRF)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. 2016R1C1B2016182), Jun 2016 – May 2019.
7. *Development of Application-specific and Smart Scalable Nanopatterning Technologies (II) - Technological Enhancement and Tangible Application Development based on Tiling, Nanoinscribing, Vibrational Nanopatterning*: supported by the industry-academia collaboration grant from **Samsung Display, Co., Ltd. (삼성디스플레이)**, Jun 2016 – May 2017.
6. *Design and fabrication of application-specific nanopatterns based on nanoimprinting and other nanopatterning methods towards novel lighting, sensing, and metasurface devices*: supported by the **Nano·Material Technology Development Program** through the **National Research Foundation of Korea (NRF)** funded by the Korean Government (**Ministry of Science, ICT and Future Planning**) (No. 2009-0082580), May 2016 – Apr 2016.
5. *Development of a Desktop Roll-to-Roll Nanopattern Printer for Flexible Electronics*: supported by the industry-academia collaboration grant as a part of **Leaders in INdustry-university Cooperation (LINC) Program** funded by the **National Research Foundation of Korea (NRF)**, Oct 2015 – Jan 2016.
4. *National Center for Optically-assisted Mechanical Systems (nCOMS)*: supported by the **Engineering Research Center (ERC) Program (선도연구센터)** through the **National Research Foundation of Korea (NRF)** grant funded by the Korean Government (**Ministry of Science and ICT**) (No. 2015R1A5A1037668), Aug 2015 – Feb 2022.
3. *Development of Application-specific and Smart Scalable Nanopatterning Technologies*: supported by the industry-academia collaboration grant from **Samsung Display, Co., Ltd. (삼성디스플레이)**, Jun 2015 – May 2016.
2. *Development of Large-area Nanomanufacturing Processes and Functional Hybrid Nanoarchitectures*: supported by the **Nano·Material Technology Development Program** through the **National Research Foundation of Korea (NRF)** funded by the Korean Government (**Ministry of Science, ICT and Future Planning**) (No. 2009-0082580), May 2015 – Apr 2016.
1. *Fabrication of Micro-trench Structures by Mechanical Patterning Methods*: supported by the commissioned research grant from **Korea Institute of Materials Science (KIMS)**, Apr 2015 – Aug 2015.

INVITED TALKS

Individual/Institutional Invitations

54. Chung-Ang University, “S.M.A.R.T. (Scalable, Mechanical, Agile, Reproducible, Thrifty) Patterning”, Mar 18, 2025.
53. Hanbat National University, “S.M.A.R.T. (Scalable, Mechanical, Agile, Reproducible, Thrifty) Patterning”, Feb 05, 2025.
52. Kumoh National Institute of Technology, “Smarter, Easier, Larger, & Faster (S.E.L.F.) Multiscale Manufacturing”, online, Oct 22, 2024.
51. Chonnam National University, “Smarter, Easier, Larger, & Faster (S.E.L.F.) Nanomanufacturing for Practical Sensing, Photonic, Energy, and Healthcare Applications”, Gwangju, Korea, Sep 25, 2024.
50. Kwangwoon University, “Smarter, Easier, Larger, & Faster (S.E.L.F.) Multiscale Manufacturing”, Seoul, Korea, Aug 14, 2024.
49. Korea Institute of Science and Technology (KIST), “Smarter, Easier, Larger, & Faster (S.E.L.F.)

- Multiscale Manufacturing”, Seoul, Korea, May 14, 2024.
48. Kookmin University, “From fabrication to manufacturing (S-E-L-F : Smarter, Easier, Larger, & Faster)”, Seoul, Korea, Jan 29, 2024.
 47. Korea Institute of Science and Technology (KIST), “Smarter, Easier, Larger, Faster (S.E.L.F.) Multiscale Machining and Patterning”, Seoul, Korea, Dec 18, 2023.
 46. Changwon National University, “Smarter, Easier, Larger, Faster (S.E.L.F.) Multiscale Nanomanufacturing”, Changwon, Gyeongsangnam-do, Korea, Nov 21, 2023.
 45. Sungkyunkwan University, “Smarter, Easier, Larger, Faster (S.E.L.F.) Multiscale Manufacturing”, Suwon, Gyeonggi-do, Korea, Sep 21, 2023.
 44. Samsung Display, “Continuous and scalable mechanical nanopatterning with tunable period, shape, and dimension”, Yongin, Gyeonggi-do, Korea, Jul 11, 2023.
 43. Sungkyunkwan University, “From fabrication to manufacturing; S-E-L-F : Smarter, Easier, Larger, & Faster”, Suwon, Gyeonggi-do, Korea, May 8, 2023.
 42. Sungkyunkwan University, “Scalable Nanomanufacturing”, Suwon, Gyeonggi-do, Korea, Jun 17, 2022.
 41. Korea Research Institute of Chemical Technology (KRICT), “S-E-L-F Nanomanufacturing: Smarter, Easier, Larger, & Faster”, Daejeon, Korea, Dec 13, 2021.
 40. Kwangwoon University, “Facile solution-processible scratch- and cracking-proof flexible heating architectures”, online, Jan 21, 2021.
 39. Korea Research Institute of Standards and Science (KRISS), “Continuous Nanopatterning Processes and Applications”, online, Nov 23, 2020.
 38. Pohang University of Science and Technology (POSTECH), “Nanoimprinting: Convention and Beyond”, Pohang, Gyeongsangbuk-do, Korea, Oct 22, 2020.
 37. Gachon University, “Nanoimprinting: Convention and Beyond”, Sunnam, Gyeonggi-do, Korea, Oct 21, 2020.
 36. Kwangwoon University, “Facile development of durable and high-performance heaters utilizing the sandwiched airbrushing of carbon nanotube solution and metal ink”, Seoul, Korea, Jan 21, 2020.
 35. Hanyang University, “Multiscale, user-specific nanomanufacturing”, Seoul, Korea, Oct 15, 2019.
 34. UNIST (Ulsan National Institute of Science and Technology), “Multiscale nanomanufacturing for user-specific applications”, Ulsan, Korea, Sep 26, 2019.
 33. Kyung-In Synthetic Company (KISCO), “Smart, Multiscale, and Mass-customized Nanomanufacturing Technologies”, Seoul, Korea, Jun 24, 2019.
 32. Korea Institute of Machinery & Materials (KIMM), “Smart, Multiscale, and Mass-customized Nanomanufacturing Technologies”, Daejeon, Korea, Apr 1, 2019.
 31. Korea Institute of Industrial Technology (KITECH), Seonam Regional Division, “Smart, Multiscale, and Mass-customized Nanomanufacturing Technologies”, Gwangju, Korea, Mar 28, 2019.
 30. Kyung Hee University, “Smart and Mass-customized Nanomanufacturing via Hybrid Nanoarchitecturing and Continuous Nanopatterning”, Yongin, Gyeonggi-do, Korea, Oct 23, 2018.
 29. Korea Institute of Industrial Technology (KITECH), Research Institute of Industrial Technology Convergence, “Solution-processible nanoarchitecturing for scalable and flexible nanoelectronics”, Ansan, Gyeonggi-do, Korea, Aug 16, 2018.
 28. Chung-Ang University, “Nano architectures for Automobile applications”, Seoul, Korea, Feb 14, 2018.
 27. Chonnam National University, “Smart and Mass-customized Nanomanufacturing via Hybrid Nanoarchitecturing and Continuous Nanopatterning”, Gwangju, Korea, Dec 11, 2017.
 26. Samsung Display, Co., Ltd., “Increasing the efficiency and viewing angle of optical devices by using continuously manufactured flexible nanopatterns”, Yongin, Gyeonggi-do, Korea, Jul 26, 2017.
 25. University of California at Berkeley, “Smart and Mass-customized Nanomanufacturing by Continuous

- Nanopatterning and Hybrid Nanoarchitecturing”, Berkeley, CA, USA, Feb 3, 2017.
24. RIKEN (as a part of the 1st nCOMS-RIKEN Joint Symposium), “Scalable Nanoarchitecturing of Functional Nanostructures by Continuous Mechanical Patterning and Hierarchical Assembly”, Wako, Japan, Dec 12, 2016.
 23. Korea Research Institute of Standards and Science (KRISS), “Scalable Nanoarchitecturing of Functional Nanostructures towards Commercially-feasible Electronic, Photonic, and Energy Applications”, Daejeon, Korea, Aug 23, 2016.
 22. Seoul National University, “Scalable Nanoarchitecturing of Functional Nanostructures towards Commercially-feasible Energy, Sensing, Electronic, and Metastructure applications”, Seoul, Korea, Jul 4, 2016.
 21. Pohang University of Science and Technology (POSTECH), “Scalable Nanoarchitecturing of Functional Nanostructures”, Pohang, Gyeongsangbuk-do, Korea, Jun 3, 2016.
 20. KAIST, “Scalable Nanoarchitecturing of Functional Nanostructures - Energy, Sensing, and Electronic Applications”, Daejeon, Korea, Feb 2, 2016.
 19. Kookmin University, International Colloquium on Nano Fusion Mechanical Technology, “Continuous Nanoarchitecturing for Highly-functional and Scalable Energy, Sensing, and Photonic Applications”, Seoul, Korea, Oct 15, 2015.
 18. Korea Institute of Machinery & Materials (KIMM), “Scalable Nanoarchitecturing for Commercially-feasible Applications in Electronics, Photonics, and Metastructures”, Daejeon, Korea, Aug 28, 2015.
 17. KAIST, “Continuous and Scalable Nanomanufacturing of Energy, Sensing, and Functional Surface Applications”, Daejeon, Korea, Jul 30, 2015.
 16. Kookmin University, “Continuous and Scalable Nanomanufacturing of Energy, Sensing, and Functional Surface Applications”, Daejeon, Korea, Jul 21, 2015.
 15. Korea Institute of Machinery & Materials (KIMM), “Mechanical machining technologies for micro-random patterning”, Daejeon, Korea, Jun 17, 2015.
 14. Ajou University, “Scalable Nanoarchitecturing of Functional Nanostructures for Commercially-feasible Energy and Electronic Applications”, Suwon, Gyeonggi-do, Korea, Apr 14, 2015.
 13. Hongik University, “Extending the Functionality and Scalability of Nanoelectronics and Nanophotonics”, Seoul, Korea, Mar 30, 2015.
 12. Korea Institute of Machinery & Materials (KIMM), “Large-scale Assembly of Small-scale functional building blocks: Commercially-feasible Nanomanufacturing of Energy, Sensing, and Functional Surface Applications”, Daejeon, Korea, Mar 20, 2015.
 11. Korea Advanced Institute of Science and Technology (KAIST), The Cho Chun Shik Graduate School for Green Transportation, “Nanomanufacturing of Energy, Sensing, and Functional Surface Applications towards Advanced Automobiles”, Daejeon, Korea, Mar 12, 2015.
 10. Korea Institute of Materials Science (KIMS), “Scalable functional nanoarchitecturing via continuous nanomanufacturing methods”, Changwon, Gyeongsangnam-do, Korea, Mar 4, 2015.
 9. University of Michigan, Solid State Electronics Laboratory (SSEL) invited seminar, “Multi-scale Nano-manufacturing: large-scale assembly of small-scale functioning building blocks towards innovative solutions”, Ann Arbor, MI, USA, Feb 24, 2015.
 8. Seoul National University, “Multiscale Nanomanufacturing: Large-scale assembly of small-scale functional building blocks towards innovative solutions”, Seoul, Korea, Jan 6, 2015.
 7. Samsung Display, Co., Ltd., “Multiscale Manufacturing of Innovative solutions via Large-scale assembly of Small-scale functional building blocks”, Yongin, Gyeonggi-do, Korea, Nov 25, 2014.
 6. Seoul National University of Science and Technology (Invited Seminar Series; Nondestructive Evaluation Lab), “Multiscale Manufacturing of Innovative solutions via Large-scale assembly of Small-scale functional building blocks”, Seoul, Korea, Nov 18, 2014.

5. Korea University, “Scalable Nanomanufacturing: Large-area assembly of small-scale functional building blocks”, Seoul, Korea, Apr 15, 2014.
4. Hongik University, “Making good stuffs by machining and assembling multi-scale building blocks in more practical way: Scalable nanomanufacturing & Functional nanoarchitectures”, Seoul, Korea, Nov 28, 2013.
3. Kyungpook National University, “Making good stuffs by machining and assembling multi-scale building blocks in more practical way: Scalable nanomanufacturing & Functional nanoarchitectures”, Daegu, Korea, Nov 20, 2013.
2. Korea Research Institute of Standards and Science (KRISS), “Functional hybrid nanoarchitectures and scalable nanomanufacturing technologies for energy conversion and optoelectronics”, Daejeon, Korea, Nov 7, 2013.
1. Korea Institute of Machinery & Materials (KIMM), “Functional hybrid nanoarchitectures and scalable nanomanufacturing technologies for energy conversion and optoelectronics”, Daejeon, Korea, Nov 6, 2013.
0. University of Texas at Austin, “Functional And Scalable Nanoarchitectures For Energy Conversion And Optoelectronics”, Austin, TX, USA, Apr 8, 2013 (faculty interview).

International Conferences

14. **J. G. Ok**, M. Kim, and K. Kim, Mechanically Machinable, Printable Photonic Materials, *15th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META 2025)*, Málaga, Spain, Jul 22-25, 2025.
13. **J. G. Ok**, Rational Design and Development of Hybrid Materials via 3R Strategy for Advanced Energy Storage Applications, *5th International Conference on Advanced Materials Synthesis, Characterisation and Applications (AMSCA 2025)*, Suwon, Gyeonggi-do, Korea, Jun 25-27, 2025.
12. **J. G. Ok**, Scalable Nanoarchitecturing Techniques and Their Sensor Applications, *7th International Conference on Active Materials and Soft Mechatronics (AMSM 2024)*, Incheon, Korea, Oct 27-30, 2024.
11. **J. G. Ok**, Continuous mechanical machining of asymmetric nanogratings with tailored period and shape by azimuthal rotation-controlled nanoinscribing, *14th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META 2024)*, Toyama, Japan, Jul 16-19, 2024.
10. **J. G. Ok**, Continuous machining of shape-tunable asymmetric nanograting structures, *1st International Symposium on Micro & Nano Manufacturing (ISMNM 2023)*, Gangneung, Gangwon-do, Korea, Jul 12-14, 2023.
9. **J. G. Ok**, Fab-less Fab: Lithography-free Nanopatterning and Vacuum-free Thin-film Architecturing, *International Symposium on Precision Engineering and Sustainable Manufacturing (PRESM 2021)*, Jeju, Jeju Special Self-Governing Province, Korea, Jul 21-23, 2021.
8. **J. G. Ok**, J. D. Kim, K. Yoo, W. S. Lee, M. C. Kim, S. Jung, J.-H. Han, J. W. Hur, J. H. Lee, D. K. Oh, and S. Lee, Facile imprinting and printing of solution-processible nanoporous metallic nanostructures, *5th International Conference & Exhibition for Nanotechnology (NANOPLA 2018)*, Changwon, Gyeongsangnam-do, Korea, Nov 7-9, 2018.
7. **J. G. Ok**, Scalable nanoarchitecturing via hybrid nanoassembly and continuous nanopatterning, *30th International Microprocesses and Nanotechnology Conference (MNC 2017)*, Jeju, Jeju Special Self-Governing Province, Korea, Nov 6-9, 2017.
6. **J. G. Ok**, High-throughput mechanical nanopatterning for scalable and flexible photonic and plasmonic applications, *8th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META 2017)*, Incheon, Korea, Jul 25-28, 2017.
5. **J. G. Ok**, Smart and mass-customized nanomanufacturing technologies based on continuous nanopatterning and hybrid nanoarchitecturing, *8th Japan-China-Korea Joint Conference on MEMS/NEMS (JCK MEMS/NEMS 2017)*, Goyang, Gyeonggi-do, Korea, Jul 14, 2017.
4. **J. G. Ok**, H. S. Youn, J.-S. Wi, M. K. Kwak, I. Park, S. Lee, S. H. Lee, D. K. Oh, K.-T. Lee, J. D. Kim,

- and J. H. Lee, High-throughput fabrication of flexible nanopatterns via continuous mechanical methods for scalable plasmonic biosensors, high-efficiency light sources, and more, *3rd International Conference & Exhibition for Nanotechnology (NANOPLA 2016)*, Changwon, Gyeongsangnam-do, Korea, Nov 17-18, 2016.
3. **J. G. Ok**, Scalable Nanoarchitecturing capitalizing Continuous Mechanical Machining and Hybrid Assembly Technologies towards Commercially-feasible Applications, *International Conference on Electronic Materials and Nanotechnology for Green Environment (ENGE 2016)*, Jeju, Jeju Special Self-Governing Province, Korea, Nov 6-9, 2016.
 2. **J. G. Ok**, Scalable Nanoarchitecturing for Commercially-feasible Applications in Electronics, Photonics, and Metastructures, *7th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META 2016)*, Malaga, Spain, Jul 25-28, 2016.
 1. **J. G. Ok**, Formulating nanostructures to more scalable and functional architectures via assembling hierarchical hybrids and adopting continuous nanomanufacturing methods, *36th Progress in Electromagnetics Research Symposium (PIERS 2015)*, Prague, Czech Republic, Jul 6-9, 2015.

Domestic Conferences

17. **J. G. Ok**, Smart and Scalable Nanopatterning and Printing based on Continuous Mechanical Machining Principles, *Korea Flexible & Printed Electronics Society (KFPE) 2024 Spring Meeting*, Busan, Mar 27-29, 2024.
16. J. Lee, D. Go, U. Lee, **J. G. Ok**, and J. An, High-Performance Nanostructured Flexible Capacitor by Plasma-Assisted Atomic Layer Annealing at Low Temperature, *31st Korean Conference on Semiconductors (KCS 2024)*, Gyeongju, Gyeongsangbuk-do, Korea, Jan 24-26, 2024.
15. **J. G. Ok**, K. Kim, Y. Kim, R. S. Ingle, and M. Kim, Machine learning-assisted optimal growth of carbon nanotube microstructures and their diverse applications, *2023 Korean Society for Composite Materials (KSCM) Fall Conference*, Geoje, Gyeongsangnam-do, Korea, Nov 8-10, 2023.
14. **J. G. Ok**, Continuous mechanical micro- and nanopatterning with tunable period, shape, and dimension, *2023 Next Generation Lithography Conference (NGL 2023)*, Suwon, Gyeonggi-do, Korea, Aug 21-22, 2023.
13. **J. G. Ok**, Fab-less fab: lithography-free nanopatterning and vacuum-free nanoarchitecturing, *Nano Convergence Conference (NCC) 2022*, Gwangju, Gyeonggi-do, Korea, Jan 18-19, 2022.
12. **J. G. Ok**, Continuous Nanopatterning Technologies based on Mechanical Machining Principles, *Korean Society of Manufacturing Process Engineers (KSMPE) 2021 Autumn Conference*, Seogwipo, Jeju Special Self-Governing Province, Korea, Dec 01-03, 2021.
11. **J. G. Ok**, Solution-Processable Electrode Embedding In Dynamically-Inscribed Nanopattern (SPEEDIN) for scratch-proof heavy-duty flexible electronics platforms, *2020 Next Generation Lithography Conference (NGL 2020)*, online conference, Nov 18-19, 2020.
10. D. K. Oh and **J. G. Ok**, Continuous Nanopatterning on Arbitrary Surfaces of Flexible Substrates and Its Diverse Applications, *Korean Society of Mechanical Engineers (KSME) 2020 Technical Division Conference (Micro-Nano Engineering Division)*, Daejeon, Korea, Jul 29-31, 2020.
9. **J. G. Ok**, N. Lee, H. Choi, J. Park, B. Han, and J. Choi, Piezo-actuated uniaxial indentation-driven period-tunable nanopatterning for user-specific design and scalable fabrication of flexible photonic devices, *2019 Next Generation Lithography Conference (NGL 2019)*, Incheon, Korea, Aug 21-23, 2019.
8. **J. G. Ok**, Mass-customized nanomanufacturing of user-specific applications, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2018 Annual Spring Conference*, Daejeon, Korea, May 02-04, 2018.
7. **J. G. Ok**, High-throughput and energy-efficient nanopatterning methodologies based on continuous mechanical machining, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2017 Annual Spring Conference*, Daegu, Korea, Apr 26-28, 2017.
6. **J. G. Ok**, Scalable Nanoarchitecturing of Functional Nanostructures utilizing Continuous Mechanical Machining and Hierarchical Assembly Technologies, *Korean Institute of Metals and Materials (KIM) 2016*

- Spring Conference*, Gyeongju, Gyeongsangbuk-do, Korea, Apr 27-29, 2016.
5. **J. G. Ok**, S. Koo, J. D. Kim, J. (Jaekyu) Park, J. (Junyong) Park, D. K. Oh, D. K. Youn, S. Lee, J. H. Lee, and H. K. Lee, High-throughput Scalable Nanopatterning Technologies Inspired by Continuous Mechanical Machining Processes, *Korean Society of Manufacturing Process Engineers (KSMPE) 2016 Spring Conference*, Gwangju, Korea, Apr 14-15, 2016.
 4. **J. G. Ok**, Scalable Nanoarchitecturing Technologies for Commercially-feasible Applications in Electronics, Photonics, and Metastructures, *Conference of the Next Generation Lithography (NGL) 2016*, Seoul, Korea, Apr 6-8, 2016.
 3. **J. G. Ok**, Continuous and Scalable Nanomanufacturing of Energy, Sensing, and Functional Surface Applications, *Korean MEMS Conference (K-MEMS) 2015 Autumn Technical Forum*, Dankook University, Yongin, Gyeonggi-do, Korea, Dec 4, 2015.
 2. **J. G. Ok**, Continuous and Scalable Nanomanufacturing Methodologies towards Energy, Sensing, and Functional Surface Applications, *Special Session for Promising Engineers in the Korean Society of Mechanical Engineers (KSME) 2015 Fall Conference (Production and Design Engineering Division)*, Seogwipo, Jeju Special Self-Governing Province, Korea, Nov 11-14, 2015.
 1. **J. G. Ok**, Continuous multiscale nanomanufacturing of scalable functional nanoarchitectures, *4th nano-Imprint·Molding·Print Forum (nano-IMP 2015)*, Korea University, Seoul, Korea, Feb 11, 2015.

CONFERENCE PUBLICATIONS AND PRESENTATIONS

International

151. K. Kim, J. Park, M. Kim, and **J. G. Ok**, Manufacturing Process of Unidirectional Nanoporous Membrane based on Vertically Aligned CNT Forest, *International Conference on Precision Engineering and Sustainable Manufacturing (PRESM 2025)*, Chiang Mai, Thailand, Jul 6-11, 2025.
150. J. Park, K. Kim, Y. T. Kim, and **J. G. Ok**, Development of High-Performance PENG Device Based on CNT Scaffold Functionalized with BTO-P(VDF-TrFE), *International Conference on Precision Engineering and Sustainable Manufacturing (PRESM 2025)*, Chiang Mai, Thailand, Jul 6-11, 2025.
149. S. L. Kadam, R. S. Ingole, Y. T. Kim, J. S. Lee, K. Kim, M. Kim, S. Ko, M. Lee, and **J. G. Ok**, Rational Design of High-Entropy Nitride Ceramics with Tunable Electrochemical Properties via Scalable Synthesis for Energy Storage, *5th International Conference on Advanced Materials Synthesis, Characterisation and Applications (AMSCA 2025)*, Suwon, Gyeonggi-do, Korea, Jun 25-27, 2025.
148. R. S. Ingole, S. L. Kadam, M. Kim, K. Kim, S. Ko, M. Lee, Y. T. Kim, J. S. Lee, and **J. G. Ok**, Designing of High Entropy Sulfide Via Low-Temperature Synthesis For Advanced Electrochemical Energy Storage, *5th International Conference on Advanced Materials Synthesis, Characterisation and Applications (AMSCA 2025)*, Suwon, Gyeonggi-do, Korea, Jun 25-27, 2025.
147. M. Lee, S. Ko, R. S. Ingole, S. L. Kadam, M. Kim, K. kim, Y. T. Kim, J. S. Lee, and **J. G. Ok**, Design and Electrochemical Properties of Dual-Structured Manganese Oxide Electrodes via Dynamic Hydrothermal Synthesis, *5th International Conference on Advanced Materials Synthesis, Characterisation and Applications (AMSCA 2025)*, Suwon, Gyeonggi-do, Korea, Jun 25-27, 2025.
146. S. Ko, M. Lee, R. S. Ingole, S. L. Kadam, M. Kim, K. Kim, Y. T. Kim, J. S. Lee and **J. G. Ok**, Solvent-Directed Two-Step Hydrothermal Synthesis of Vanadium Oxide Electrodes for Enhanced Electrochemical Performance, *5th International Conference on Advanced Materials Synthesis, Characterisation and Applications (AMSCA 2025)*, Suwon, Gyeonggi-do, Korea, Jun 25-27, 2025.
145. M. Kim, Y. T. Kim, D. B. Sim, B. H. Kim, and **J. G. Ok**, Scalable Fabrication of Metal Microgratings by Continuous Scribing using a Sawtooth-Patterned Cemented Carbide Tool, *10th International Conference on Manufacturing, Machine Design and Tribology (ICMDT 2025)*, Apr 23-25, 2025.
144. M. Lee, S. Ko, R. S. Ingole, S. L. Kadam, M. Kim, Y. T. Kim, J. S. Lee, and **J. G. Ok**, Electrochemical

- Performance of MnO₂ Electrodes Synthesized by Hydrothermal Method: Influence of Deposition Temperature and Time, *10th International Conference on Manufacturing, Machine Design and Tribology (ICMDT 2025)*, Apr 23-25, 2025.
143. S. Ko, M. Lee, R. S. Ingole, S. L. Kadam, M. Kim, Y. T. Kim, K. Kim, and **J. G. Ok**, Improving Energy density of Supercapacitors by Utilizing NanonetworkStructured V₂O₅ in the Electrodes, *10th International Conference on Manufacturing, Machine Design and Tribology (ICMDT 2025)*, Apr 23-25, 2025.
 142. Y. T. Kim, J. S. Lee, H. Park, M. Kim, and **J. G. Ok**, TSV Shape and Array Optimization using Resolution-Enhancing AI and Simulation, *10th International Conference on Manufacturing, Machine Design and Tribology (ICMDT 2025)*, Apr 23-25, 2025.
 141. J. S. Lee, Y. T. Kim, K. Kim, M. Kim, S. Ko, M. Lee, and **J. G. Ok**, AI-based Fluid Analysis with Morphological Optimization of Catalyst Nanoparticles toward Reliable Growth of CNT Microstructures, *10th International Conference on Manufacturing, Machine Design and Tribology (ICMDT 2025)*, Apr 23-25, 2025.
 140. S. L. Kadam, R. S. Ingole, Y. T. Kim, J. S. Lee, K. Kim, M. Kim, S. Dasade, S. Kulkarni, and **J. G. Ok**, Engineering Cobalt Oxide Nanostructures: Tailoring Deposition Parameters and Employing Machine Learning for Supercapacitor Performance Estimation, *8th International Conference on Nanoscience and Nanotechnology (ICONN-2025)*, Mar 24-26, 2025.
 139. M. Kim, D. B. Sim, Y. T. Kim, B. H. Kim, and **J. G. Ok**, Direct continuous scribing of scalable micrograting structures on metal surfaces by using a sawtooth-patterned edge of a cemented carbide tool prepared by WEDM-ed PCD, *6th International Conference on Manufacturing Process & Technology (ICMPT 2025)*, Bali, Indonesia, Feb 10-13, 2025.
 138. K. Kim, M. Kim, R. S. Ingole, S. L. Kadam, Y. T. Kim, J. S. Lee, H. Park, J. Park, and **J. G. Ok**, Development of an advanced PENG using multi-layered CNT sheet functionalized with BTO-P(VDF-TrFE), *4th International Conference on Advanced Materials Synthesis, Characterization, and Applications (AMSCA 2024)*, Brisbane, Australia, Sep 25-27, 2024.
 137. M. Kim, K. Kim, R. S. Ingole, S. L. Kadam, Y. T. Kim, H. Park, J. S. Lee, and **J. G. Ok**, Flexible ZnO Nanogenerators with Laterally Interconnected Nanowires on Topographic Micrograting Electrodes, *4th International Conference on Advanced Materials Synthesis, Characterization, and Applications (AMSCA 2024)*, Brisbane, Australia, Sep 25-27, 2024.
 136. S. L. Kadam, R. S. Ingole, K. Kim, M. Kim, Y. T. Kim, S. Kulkarni, and **J. G. Ok**, Development of Reduced Graphene Oxide Decorated Cobalt Oxide Hybrid Electrode Materials for Flexible Energy Storage Device, *4th International Conference on Advanced Materials Synthesis, Characterization, and Applications (AMSCA 2024)*, Brisbane, Australia, Sep 25-27, 2024.
 135. R. S. Ingole, K. Kim, M. Kim, Y. T. Kim, S. L. Kadam, and **J. G. Ok**, Development of Vanadium Sulfide-MXene Hybrid Materials for Advanced Supercapacitor Systems, *4th International Conference on Advanced Materials Synthesis, Characterization, and Applications (AMSCA 2024)*, Brisbane, Australia, Sep 25-27, 2024.
 134. D. Kim, H. Kwak, I. Jung, S. Ju, S. Choi, C. Kang, H. Kim, H. W. Baac, **J. G. Ok**, and K.-T. Lee, Quad-layered reflective RGB structural color filters by a phase-compensated mirror, *2024 Conference on Lasers and Electro-Optics/Pacific Rim (CLEO-PR 2024)*, Incheon, Korea, Aug 4-8, 2024.
 133. D. Kim, I. Jung, S. Ju, C. Kang, D. Lim, **J. G. Ok**, H. J. Park, and K.-T. Lee, Manipulation of resonance orders in tri-layered structures for reflective RGB colors with high color purity, *2024 Conference on Lasers and Electro-Optics/Pacific Rim (CLEO-PR 2024)*, Incheon, Korea, Aug 4-8, 2024.
 132. K. Kim, M. Kim, Y. T. Kim, R. S. Ingole, and **J. G. Ok**, Development of Low-Temperature Manufacturing Process for Metal-Semiconductor Nanostructure with Enhanced Optoelectronic Transduction, *International Conference on Precision Engineering and Sustainable Manufacturing (PRESM 2024)*, Busan, Korea, Jul 7-12, 2024.
 131. M. Kim, K. Kim, Y. T. Kim, R. S. Ingole, and **J. G. Ok**, Scalable Fabrication of Flexible Optoelectronic Sensors Using Dynamic Nano-Inscribing and Metal-Mediated Hydrothermal Growth, *International Conference on Precision Engineering and Sustainable Manufacturing (PRESM 2024)*, Busan, Korea, Jul 7-12, 2024.

130. Y. T. Kim, M. Kim, K. Kim, R. S. Ingole, and **J. G. Ok**, AI-based fluid analysis with morphological optimization of catalyst nanoparticles toward reliable growth of CNT microstructures, *International Conference on Precision Engineering and Sustainable Manufacturing (PRESM 2024)*, Busan, Korea, Jul 7-12, 2024.
129. R. S. Ingole, K. Kim, M. Kim, Y. T. Kim, S. L. Kadam, and **J. G. Ok**, Self-Assembled VS₂/MXene Nanocomposite Electrodes: A Promising Approach for Next-Generation Supercapatteries, *International Conference on Precision Engineering and Sustainable Manufacturing (PRESM 2024)*, Busan, Korea, Jul 7-12, 2024.
128. R. S. Ingole, K. Kim, M. Kim, Y. T. Kim, S. L. Kadam, and **J. G. Ok**, Facile Solvothermal Synthesis of Binder Free 1T-VS₂/MXene Hybrid Electrode Materials for Li-Ion Batteries, *2024 MRS Spring Meeting & Exhibit*, Seattle, WA, USA, Apr 22-26, 2024.
127. K. Kim, Y. T. Kim, M. Kim, R. S. Ingole, and **J. G. Ok**, Optimization of reliable and reproducible growth of carbon nanotube forests and microstructures based on the machine learning-assisted control of catalyst nanoparticle morphology, *2024 MRS Spring Meeting & Exhibit*, Seattle, WA, USA, Apr 22-26, 2024.
126. M. Kim, K. Kim, R. S. Ingole, Y. T. Kim, and **J. G. Ok**, Vacuum- and etch-free mechanical fabrication of metal wire microtrenches interconnected by ZnO nanowires for flexible bending-sensitive optoelectronic sensors, *2024 MRS Spring Meeting & Exhibit*, Seattle, WA, USA, Apr 22-26, 2024.
125. R. S. Ingole, K. Kim, M. Kim, Y. T. Kim, S. L. Kadam, and **J. G. Ok**, Solvent-Tailored Solvothermal Synthesis of 1T-VS₂ Nanostructured Electrode Materials for Electrochemical Energy Storage Applications, *2024 MRS Spring Meeting & Exhibit*, Seattle, WA, USA, Apr 22-26, 2024.
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7. **J. G. Ok** and L. J. Guo, Scalable fabrication of multidimensional nanopatterns via sequential combination of continuous nanograting patterning strokes, *Korean Society of Precision Engineering (KSPE) 2015 Spring Conference*, Jeju, Jeju Special Self-Governing Province, Korea, May 13-15, 2015. <http://www.dbpia.co.kr/Article/NODE06364186>
6. **J. G. Ok**, M. K. Kwak, and L. J. Guo, Continuous and scalable nanopatterning technologies inspired by mechanical rolling, pullout, and forging, and their combination towards high-throughput fabrication of multi-dimensional nanopatterns, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2015 Annual Spring Conference*, Daejeon, Korea, Apr 28-30, 2015. <http://www.dbpia.co.kr/Article/3676596>
5. **J. G. Ok**, A. J. Hart, and L. J. Guo, Continuous Nanomanufacturing: Formatting as-grown nanostructures to more beneficial and scalable configurations, *Korean MEMS Conference (K-MEMS) 2015*, Jeju, Jeju Special Self-Governing Province, Korea, Apr 2-4, 2015.
4. **J. G. Ok**, A. J. Hart, and L. J. Guo, Three-dimensional hierarchical hybrid nanoarchitectures comprising carbon nanotubes and metal oxide nanowires, *Korean Society of Mechanical Engineers (KSME) 2014 Fall Conference*, Gwangju, Korea, Nov 11-14, 2014. <http://www.dbpia.co.kr/Article/3549568>
3. **J. G. Ok**, M. K. Kwak, and L. J. Guo, Continuous and scalable nanomanufacturing technologies inspired by mechanical rolling, pullout, and forging protocols, *Korean Society of Precision Engineering (KSPE) 2014 Autumn Conference*, Changwon, Gyeongsangnam-do, Korea, Oct 29-31, 2014. <http://www.dbpia.co.kr/Article/3598334>
2. S. H. Lee, M. K. Kwak, **J. G. Ok**, and L. J. Guo, Visually Tolerable Tiling (VTT) strategy for making large-area masters out of small-area molds, *Korean Society of Precision Engineering (KSPE) 2014 Spring Conference*, Jeju, Jeju Special Self-Governing Province, Korea, May 14-16, 2014. <http://www.dbpia.co.kr/Article/3455489>
1. J. H. Lee, **J. G. Ok**, L. J. Guo, and M. K. Kwak, Photo Roll Lithography for continuous patterning with applications in optical films, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2013 Autumn Conference*, Jeju, Jeju Special Self-Governing Province, Korea, Oct 16-18, 2013. <http://www.dbpia.co.kr/Article/3272503>

TEACHING

Instructor

Seoul National University of Science and Technology (SEOULTECH)

Semiconductor Convergence Engineering

Semiconductor Convergence Seminar

since Fall 2021

<i>Semiconductor Process Laboratory</i>	since Fall 2021
<i>Advanced Micro/Nano Technology</i>	since Summer 2021
<i>Introduction to Semiconductor Manufacturing Process</i>	since Summer 2021
<i>Introduction to Measurement and Analysis</i>	since Spring 2021

Mechanical and Automotive Engineering

<i>Automotive Materials</i>	since Fall 2025
<i>Smart Precision Design, Machining, and Manufacturing</i> (Graduate)	since Spring 2025
<i>Automotive Engineering Lab.(1)</i>	since Spring 2025
<i>Ultra-precision Manufacturing Technology</i> (Graduate)	Spring 2016–Spring 2021
<i>Automotive Computer Aided Design</i>	since Spring 2015
<i>Automotive Drawing</i>	since Fall 2014
<i>Engineering Design Process</i>	Fall 2014–Fall 2023
<i>Automotive Engineering Lab.(2)</i>	Fall 2020
<i>Engineering Mathematics (1)</i>	Spring 2018
<i>Special Manufacturing Process</i> (Graduate)	Spring 2015
<i>Elementary Shop Practice</i>	Fall 2014

Invited Lecturer/Tutor

MEU6430: <i>Micro and Nano Molding Process</i> , Yonsei University	2019, 2021, 2023, 2024
Lecture title: “Multiscale Nanopatterning: Nanoimprinting and Beyond” (Nov 26, 2019; Nov 30, 2021; Nov 1, 2023; Nov 27, 2024)	
MEMS <i>Processing Educational Seminar Series</i> , SEOULTECH	2015–2021
Deposition-based fabrication technologies and direct applications (반도체/MEMS 증착공정 및 응용)	
S+ MEMS <i>Processing Educational Seminar Series</i> , SEOULTECH	2019–2020
Deposition (반도체/MEMS 증착공정)	
181107 <i>Semiconductor Device Packaging</i> , SEOULTECH	2020
Lecture title: “Multiscale Nanopatterning: Nanoimprinting and Beyond” (Jan 7, 2020)	
9680004: <i>Manufacturing Systems Engineering</i> , SEOULTECH	2017
Lecture title: “Smart and Mass-customized Nanomanufacturing” (Nov 15, 2017)	
nCOMS <i>Manufacturing Tutorial</i> , Korean Society of Manufacturing Technology Engineers	2016
Tutorial title: “Scalable Nanoarchitecturing of Functional Nanostructures utilizing Continuous Mechanical Machining and Hierarchical Assembly Technologies” (Apr 29, 2016)	
EECS 528: <i>Principles of Microelectronics Process Technology</i> , University of Michigan	2013
Lecture title: “Non-conventional micro/nano-fabrication technologies based on mechanical deformation” (Feb 22, 2013)	

Teaching Assistant

Seoul National University

<i>Micro-nano Mechanics</i>	Spring 2006
<i>Solid Mechanics</i>	Spring 2006
<i>Finite Element Method in Aerospace Engineering</i>	Fall 2005
<i>Mechanics and Design</i>	Fall 2005

PROFESSIONAL SERVICES

Board Member

한국복합재료학회 (탄소·섬유재료부문 총무이사) Korean Society for Composite Materials (KSCM)	since 2025
마이크로나노시스템학회 (총무이사·홍보위원장) Society of Micro and Nano Systems (SMNS)	since 2019
한국생산제조학회 (총무·편집이사·재정부회장) Korean Society of Manufacturing Technology Engineers (KSMTE)	since 2017
한국정밀공학회 (학술이사) Korean Society of Precision Engineering (KSPE)	since 2017
한국기계가공학회 (주편집위원·학술이사) Korean Society of Manufacturing Process Engineers (KSMPE)	since 2016
나노기술연구협의회 (나노매뉴팩처링분회) Korea Nano Technology Research Society (KoNTRS)	since 2015
대한기계학회 (생산설계부문·마이크로나노공학부문-총무·재무이사) Korean Society of Mechanical Engineers (KSME)	since 2015

Official Member

한국복합재료학회 Korean Society for Composite Materials (KSCM)	since 2023
한국전기전자재료학회 Korean Institute of Electrical and Electronic Material Engineers (KIEEME)	since 2022
한국광학회 Optical Society of Korea (OSK)	since 2016
한국기계가공학회 Korean Society of Manufacturing Process Engineers (KSMPE)	since 2016
나노기술연구협의회 Korea Nano Technology Research Society (KoNTRS)	since 2015
한국생산제조학회 Korean Society of Manufacturing Technology Engineers (KSMTE)	since 2015
마이크로나노시스템학회 Society of Micro and Nano Systems (SMNS)	since 2015
대한기계학회 Korean Society of Mechanical Engineers (KSME)	since 2015
한국정밀공학회 Korean Society of Precision Engineering (KSPE)	since 2014

Journal Editor

International Journal of Precision Engineering and Manufacturing–Green Technology	since 2025
Micro and Nano Systems Letters	since 2022
Journal of the Korean Society of Manufacturing Process Engineers	since 2018
Journal of the Korean Society of Manufacturing Technology Engineers	since 2018
Journal of Sensor Science and Technology	since 2018
Journal of Mechanical Science and Technology Advances	since 2018

Department Chair

Manufacturing Technology Convergence Program	Feb 2025 – Feb 2027
Mechanical and Automotive Engineering, Seoul National University of Sci. & Tech.	Feb 2022 – Feb 2024

Program Director, BEAR (Best Education for Applied Research) Program in National University Development Project

Automotive Engineering Program, Seoul National University of Sci. & Tech.	Mar 2019 – Feb 2020
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Program Director, Accreditation Board for Engineering Education of Korea (ABEEK; 공학인증)

Automotive Engineering Program, Seoul National University of Sci. & Tech.	Mar 2015 – Feb 2017
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LEADERSHIP AND OUTREACH

Korean Student Association-Graduate at the University of Michigan (UMich) (KSAG) since Jul 2011

Vice President; Chief of Recruiting Division Jul 2011 – Jun 2012
: Hosting recruiting fairs and social and sports activities and holding communal and charity events in cooperation with Michigan Korean communities.

Korean Mechanical Engineering Student Association at UMich (KOREAMECH) since Sep 2007

President Sep 2010 – Aug 2011
: Holding professional, recruiting, and social activities.

SNU Alumnae in Mechanical Eng. & Applied Mechanics at UMich (SNU-MEAM) since Sep 2007

President Sep 2008 – Aug 2009
: Holding various social and professional events.

Mechanical and Aerospace Reporters (MARS), Seoul National University Aug 2005 – Feb 2007

Editor in chief Sep 2006 – Feb 2007
: Serving as an official reporter of department; covered, wrote, and edited articles and interviewed faculty; published quarterly official department newsletters.

Additional information and references available upon request.