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Associate Professor

Department of Mechanical and Automotive Engineering (기계·자동차공학과)

Semiconductor Convergence Engineering Program (반도체융합공학전공)

Research Institute of Green Automobile Technology (친환경자동차기술연구소)

Research Center for Advanced Semiconductor Packaging (첨단반도체패키징연구소)

Seoul National University of Science and Technology (서울과학기술대학교)

RESEARCH INTERESTS

- **S.E.L.F. (Smart, Efficient, Large-area, Fast) 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, electronic, and green-vehicle components; diffractive optical elements; functional surfaces
- **Semiconductor Processes 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 instruments; microelectrode array; EUV lithography pellicle; optoelectronic, optomechanical, and neurosignal transducers
- **Supercapattery (supercapacitor + battery) and energy devices**: metal/semiconductor/carbon-based supercapacitor and battery devices; high-performance supercapacitors; secondary and all-solid-state batteries; 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

EDUCATION

University of Michigan — Ann Arbor, MI, USA
Ph.D., Mechanical Engineering — 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

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

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

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

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, 2017
Ministry of Trade, Industry and Energy; Korean Society of Manufacturing Technology Engineers
KSMTE Young Engineers Award, 2016
Ministry of Trade, Industry and Energy; Korean Society of Manufacturing Technology Engineers
Precision Engineering Creativity Competition; **Silver Medal** 2016
Hyundai Wia, Co., Ltd.; Korean Society of Precision Engineering
'Inside Edge' International Thesis Competition; **Bronze Medal** 2013
Samsung Electro-Mechanics, Co., Ltd.

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 & Student Awards

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) 2024
Nanotechnology Research Centre (NRC) & SRM Institute of Science and Technology
Certificate of Best Paper, International Symposium on Micro and Nano Manufacturing (ISMNM 2023) 2023
Korean Society of Manufacturing Technology Engineers
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, 8th 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, 16th 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, 6th 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, 5th nano-Imprint·Molding·Print Forum 2016
Engineering Graduate Symposium; 2nd-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)

Under Review

101. 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, submitted to *Optics and Laser Technology*.

100. B. Goel, N. Sharma, V. Mishra, **J. G. Ok**, R. Kumar, D. Lee, and T. Singh, Optimizing polymethyl methacrylate machining process parameters using soft computing techniques, *Soft Computing*, under review.

099. B. Goel, R. Kumar, S. Gangwar, G. Singh, D. Lee, R. G. V. Sarepaka, V. Mishra, and **J. G. Ok**, Comprehensive review of diamond tool wear in ultra-precision machining, *International Journal of Advanced Manufacturing Technology*, under review.

Accepted/In Press

98.* R. S. Ingole, K. Kim, M. Kim, Y. T. Kim, S. L. Kadam, J. Y. Seok, and **J. G. Ok**, Synthesis of vanadium oxide-infused carbon nanotube hybrid composite electrodes via one-pot hydrothermal method for superior symmetric supercapacitor performance, *Journal of Energy Storage*, in minor revision.

97.* R. S. Ingole‡, S. L. Kadam‡, R. Kamat, **J. G. Ok**, and S. B. Kulkarni, Synthesis and electrochemical characterizations of RGO-decorated MnO_2 nanowires/carbon cloth-based wearable symmetric supercapacitors, *Surfaces and Interfaces*, in press.

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*, online published (Mar 2024).
https://doi.org/10.1007/s40684-024-00601-3

FULLY ISSUED (* = 43 / Red #'s: <10% JCR year published = 31)

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 efficiency 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.* 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 (Mar 2024).
https://doi.org/10.1021/acsanm.3c05018

88.* 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

87. S. Kadam‡, R. Ingole‡, 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

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

75.* K. Choi‡, H. Son‡, J. (Jaewon) Park‡, I. Han, B. Han, B. Youn, J. (Jonggab) Park, M. Kim, E. Jeong, and **J. G. Ok**, Demonstration of durable electronic textiles *via* mechanically assisted highly adhesive printing of carbon nanotube-polymer composites on commercial fabrics, *Journal of Industrial and Engineering Chemistry* **108**, 508-513 (Apr 2022).
https://doi.org/10.1016/j.jiec.2022.01.031

74.* H. Choi‡, K. Kim‡, M. Kim‡, J. D. Kim, I. Cho, I. Kim, H. Chae, I. Han, H. Kim, J. H. Seo, H. W. Baac, I. Park, and **J. G. Ok**, Solution-processable Ag-mediated ZnO nanowires for scalable low-temperature fabrication of flexible devices, *ACS Applied Electronic Materials* **4** (3), 910-916 (Mar 2022).
https://doi.org/10.1021/acsaelm.2c00035

73.* J.-S. Wi, J. D. Kim, W. Lee, H. Choi, M. Kwak, J. Song, T. G. Lee, and **J. G. Ok**, Inkjet-printable nanoporous Ag disk arrays enabling coffee-ring effect-driven analyte enrichment towards practical SERS applications, *International Journal of Precision Engineering and Manufacturing–Green Technology* **9** (2), 421-429 (Mar 2022).
https://doi.org/10.1007/s40684-021-00351-6

72.* D. K. Oh‡, W. Lee‡, H. Chae, H. Chun, M. Lee, D. H. Kim, J. Kim, J. Choi, S. Hwang, M. Park, G. Yeon, S. Jung, J. Rho, and **J. G. Ok**, Burr- and etch-free direct machining of shape-controlled micro- and nanopatterns on polyimide films by continuous nanoinscribing for durable flexible devices, *Microelectronic Engineering* **257**, 111740 (Mar 2022).
https://doi.org/10.1016/j.mee.2022.111740

71.* W. Jung, Y. Choe, T. Kim, **J. G. Ok**, H. H. Lee, and Y. H. Kim, High-permeability vacuum membrane distillation utilizing mechanically compressed carbon nanotube membranes, *RSC Advances* **12** (1), 201-206 (Jan 2022).
https://doi.org/10.1039/D1RA08042C

70.* M. A. Abbasi, M. Faraz, M. G. Joo, D. Son, S. M. Won, **J. G. Ok**, H. J. Park, and H. W. Baac, Variable-focus optoacoustic lens with wide dynamic range and long focal length by using a flexible polymer nanocomposite membrane, *Ultrasonics* **117**, 106545 (Dec 2021).

https://doi.org/10.1016/j.ultras.2021.106545

69.* K. A. Juggernauth‡, M. Kim‡, K. Kim‡, J. Li, A. A. McLane, J. Lee, A. J. Hart, and **J. G. Ok**, Carbon nanotube-mediated three-dimensional vanadium oxide nanoarchitectures with tunable morphology and translatable functionality, *Ceramics International* **47** (22), 32342-32348 (Nov 2021). https://doi.org/10.1016/j.ceramint.2021.08.131

68. P. G. Sang, D. Biswas, S. J. Lee, S. M. Won, D. Son, **J. G. Ok**, H. J. Park, and H. W. Baac, Experimental demonstration of a stacked hybrid optoacoustic-piezoelectric transducer for localized heating and enhanced cavitation, *Micromachines* **12** (10), 1268 (Oct 2021). https://doi.org/10.3390/mi12101268

67.* L. Chen‡, A. Panday‡, J. Park, M. Kim, D. K. Oh, **J. G. Ok**, and L. J. Guo, Size-selective sub-micrometer-particle confinement utilizing ionic entropy-directed trapping in inscribed nanovoid patterns, *ACS Nano* **15** (9), 14185-14192 (Sep 2021). https://doi.org/10.1021/acsnano.1c00014

66.* W. Lee‡, H. Chae‡, D. K. Oh‡, M. Lee, H. Chun, G. Yeon, J. Park, J. Kim, H. Youn, J. Rho, and **J. G. Ok**, Solution-processable electrode-material embedding in dynamically inscribed nanopatterns (SPEEDIN) for continuous fabrication of durable flexible devices, *Microsystems & Nanoengineering* **7**, 74 (Sep 2021). https://doi.org/10.1038/s41378-021-00307-5

65.* H. Chun, Y. Kim, H. Chae, M. Lee, B. Han, M. Kim, H. Choi, J. W. Hur, H.-S. Kim, and **J. G. Ok**, Facile airbrush fabrication of gas diffusion layers comprising fine-patterned hydrophobic double-layer and hydrophilic channel for improved water removal in polymer electrolyte membrane fuel cells, *International Journal of Precision Engineering and Manufacturing–Green Technology* **8** (5), 1461-1469 (Sep 2021). https://doi.org/10.1007/s40684-020-00254-y

64.* D. K. Oh‡, T. Lee‡, B. Ko‡, T. Badloe, **J. G. Ok**, and J. Rho, Nanoimprint lithography for high-throughput fabrication of metasurfaces, *Frontiers of Optoelectronics* **14** (2), 229-251 (Jun 2021). https://doi.org/10.1007/s12200-021-1121-8

63. D. K. Oh‡, H. Jeong‡, J. Kim‡, Y. Kim‡, I. Kim, **J. G. Ok**, and J. Rho, Top-down nanofabrication approaches toward single-digit-nanometer scale structures, *Journal of Mechanical Science and Technology* **35** (3), 837-859 (Mar 2021). https://doi.org/10.1007/s12206-021-0243-7

62.* J. Park‡, K.-T. Lee‡, G. Yeon‡, J. Choi, M. Kim, B. Han, H. W. Baac, L. J. Guo, and **J. G. Ok**, Demonstration of the one-step continuous fabrication of flexible polymer ridge waveguides via nanochannel-guided lithography, *Journal of Industrial and Engineering Chemistry* **95**, 286-291 (Mar 2021). https://doi.org/10.1016/j.jiec.2020.12.034

61.* S. Lee‡, N. Lee‡, G. Yeon‡, J. Park, H. Choi, S. Koo, D. K. Oh, and **J. G. Ok**, Piezo-actuated One-axis-vibrational Patterning for mold-free continuous fabrication of high-precision period-programmable micro- and nanopatterns, *ACS Nano* **15** (2), 3070-3078 (Feb 2021). https://doi.org/10.1021/acsnano.0c09540

60.* D. K. Oh‡, H. Choi‡, H. Shin, K. Kim, M. Kim, and **J. G. Ok**, Tailoring zinc oxide nanowire architectures collectively by catalytic vapor-liquid-solid growth, catalyst-free vapor-solid growth, and low-temperature hydrothermal growth, *Ceramics International* **47** (2), 2131-2143 (Jan 2021). https://doi.org/10.1016/j.ceramint.2020.09.049

59. T. Lee, C. Lee, D. K. Oh, T. Badloe, **J. G. Ok**, and J. Rho, Scalable and high-throughput top-down manufacturing of optical metasurfaces, *Sensors* **20** (15), 4108 (Jul 2020). https://doi.org/10.3390/s20154108

58.* K. Yoo‡, W. Lee‡, K. Kang, I. Kim, D. Kang, D. K. Oh, M. C. Kim, H. Choi, K. Kim, M. Kim, J. D. Kim, I. Park, and **J. G. Ok**, Low-temperature large-area fabrication of ZnO nanowires on flexible plastic substrates by solution-processible metal-seeded hydrothermal growth, *Nano Convergence* **7**, 24 (Jul 2020).

https://doi.org/10.1186/s40580-020-00235-6

57. S. H. Baek, H. W. Song, S. Lee, J.-E. Kim, Y. H. Kim, J.-S. Wi, **J. G. Ok**, J. S. Park, S. Hong, M. K. Kwak, H. J. Lee, and S.-W. Nam, Gold nanoparticle-enhanced and roll-to-roll nanoimprinted LSPR platform for detecting interleukin-10, *Frontiers in Chemistry* **8**, 285 (May 2020). https://doi.org/10.3389/fchem.2020.00285

56.* D. K. Oh‡, S. Lee‡, S. H. Lee‡, W. Lee, G. Yeon, N. Lee, K.-S. Han, S. Jung, D. H. Kim, D.-Y. Lee, S. H. Lee, H. J. Park, and **J. G. Ok**, Tailored nanopatterning by controlled continuous nanoinscribing with tunable shape, depth, and dimension, *ACS Nano* **13** (10), 11194-11202 (Oct 2019). https://doi.org/10.1021/acsnano.9b04221

55. H. S. Kim, M. Na, **J. G. Ok**, G. Kim, and S.-J. Ye, Development of the hemispherical rotational modulation collimator imaging system, *IEEE Transactions on Nuclear Science* **66** (9), 2114-2122 (Sep 2019). https://doi.org/10.1109/TNS.2019.2933442

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TECHNOLOGY TRANSFERS

2. 패턴 가공 장치 및 이를 이용한 패턴 가공 방법; 통상실시권 허여(특허 10-2022-0056226) (Pattern manufacturing apparatus and pattern manufacturing method using the same; KR patent 10-2022-005622) a to Small Machines, Co., Ltd., KRW 35,200,000, Jan 24, 2024.

1. 미세검체 감지소자 제조를 위한 대면적 나노패턴 고속 성형 기술 일부 (Part of a high-throughput large-area nanopatterning technology for microfluidic diagnostic sensor manufacturing) to Small Machines, Co., Ltd., KRW 11,000,000, Jan 24, 2022.

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11. WO PCT patent, *WO 2018/169119 A1*, App. # *PCT/KR2017/003590*, J.-S. Wi and J. G. Ok, Nano plasmonic sensor and method of manufacturing the same, filed on Mar 31, 2017; published on Sep 20, 2018.
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9. US patent (granted; *US 10661273 B2*), *US 2017/0100716 A1*, App.# *15/293,134*, J. G. Ok, L. J. Guo, L. Chen, A. Panday, Two-dimensional micro- and nano-pattern, methods for forming the same, and microfluidic devices formed therefrom, filed on on Oct 13, 2016; published on Apr 13, 2017; granted on May 26, 2020.
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8. US patent (granted; *US 10007124 B2*), *US 2016/0062132 A1*, App.# *14/838,507*, J. Park, D. Kim, J. Bae, B. Shin, J. G. Ok, I. Yoon, S. Lee, J. Chung, S. Hahm, Master wafer, method of manufacturing the same, and method of manufacturing optical device by using the same, filed on Aug 28, 2015; published on Mar 3, 2016; granted on Jun 26, 2018.
https://patents.google.com/patent/US10007124B2

7. US patent (granted; *US 9658484 B2*), *US 2016/0033818 A1*, App.# *14/817,496*, S. Lee, D. Kim, J. Park, J. Bae, B. Shin, J. G. Ok, I. Yoon, J. Chung, S. Hahm, Pattern structure and method of manufacturing the pattern structure, and liquid crystal display device, filed on Aug 4, 2015; published on Feb 4, 2016; granted on May 23, 2017.
https://patents.google.com/patent/US9658484B2

6. US patent (granted; *US 9784896 B2*), *US 2016/0054498 A1*, App.# *14/733,234*, J. Chung, D. Kim, J. Park, J. Bae, B. Shin, S. Lee, S. Hahm, J. G. Ok, I. Yoon, Pattern structure and method of manufacturing the pattern structure, filed on Jun 8, 2015; published on Feb 25, 2016; granted on Oct 10, 2017.
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5. US patent (granted; *US 10185218 B2*), *US 2016/0023400 A1*, App.# *14/733,172*, J. Chung, D. Kim, J. Park, J. Bae, B. Shin, J. G. Ok, I. Yoon, S. Lee, S. Hahm, Method of transferring reverse pattern by using imprint process, filed on Jun 8, 2015; published on Jan 28, 2016; granted on Jan 22, 2019.
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4. US patent (granted; *US 9855703 B2*), *US 2016/0023399 A1*, App.# *14/724,898*, S. Lee, D. Kim, J. Park, J. Bae, B. Shin, J. Chung, S. Hahm, J. G. Ok, I. Yoon, Method of forming aligned pattern in pattern formation region by using imprint process, filed on May 29, 2015; published on Jan 28, 2016; granted on Jan 2, 2018.
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2. KR patent (granted; *10-0821262*), *10-2006-0081522*, W. Y. Sung, Y. H. Kim, W. J. Kim, J. G. Ok, E. Y. Jang, H. Y. Lee, Method for forming electron emitter tip by carbon nanostructures grown by cap, filed on Aug 28, 2006; published on Mar 4, 2008; granted on Apr 3, 2008.
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1. KR patent (granted; *10-0804496*), *10-2006-0033169*, W. Y. Sung, Y. H Kim, H. Y. Lee, W. J. Kim, S. M. Lee, J. G. Ok, S. C. Yeon, Method for forming dentric copper tip using nano-electroplating and method for forming carbon nanofibers and carbon nanocoils using the same, filed on Apr 12, 2006; published on Oct 18, 2007; granted on Feb 12, 2008.
https://doi.org/10.8080/1020060033169

PROJECTS (not listed intramural and < KRW 5,000,000 grants: full list available upon request)

37. *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. (KRW 330,000,000 for us; KRW 1,375,000,000 in total)

36. *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), Aug 2024 – Dec 2026. (KRW ~450,000,000)

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. (KRW ~450,000,000 for us; KRW 4,500,000,000 in total)

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. (KRW 36,000,000)

33. *Development of DSTB/DSLD 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. (KRW 252,000,000 for us; KRW 2,252,000,000 in total)
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 **대학기술경영촉진사업 (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. (KRW 140,000,000)
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. (KRW 96,000,000)
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. (KRW 20,000,000 for us; KRW 100,000,000 in total)
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. (KRW 175,000,000 for us; KRW 1,000,000,000 in total)
28. *Human-hybridized eco-friendly energy device inspired by an excitable cell*: supported by the **STEAM Research Program (미래유망융합기술파이오니어)** 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. (KRW 670,000,000 for us; KRW 5,500,000,000 in total)
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. (KRW 625,000,000)
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. (KRW 100,000,000)
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. (KRW 16,750,000 for us; KRW 148,250,000 in total)
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. (KRW 20,000,000)
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. (KRW ~247,500,000 for us; KRW 6,750,000,000 in total)

22. *Development of signal-enhanced protein detecting chips by GLAD-based microinjection*: supported by the project for **Collabo R&D between Industry, Academy, and Research Institute** funded by the Korean Government (**Ministry of SMEs and Startups**) (Project No. S2902156), Jun 2020 – Feb 2021. (KRW 20,000,000)
21. *Direct continuous manufacturing of microtrench patterns on stiff polymers and solution-processable embedding of durable 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. (KRW 137,500,000)
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. (KRW 32,100,000)
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. (KRW 189,000,000 for us, KRW 1,500,000,000 in total)
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. (KRW 90,000,000 for us; KRW 2,599,404,000 in total)
17. *Investigation of the direct micro- and nano- complex pattern molding for arbitrary surfaces of mobile devices*: supported by the industry-academia collaboration grant from **Samsung Electronics, Co., Ltd. (삼성전자)**, May 2019 – Dec 2019. (KRW 55,000,000)
16. *Development of the embedded silver nanomesh pattern templates for surface-functionalized biosensing devices for on-chip mass analysis and other optical, sensing, and metastructured 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 and ICT**) (No. 2009-0082580), May 2019 – Apr 2020. (KRW 9,550,000)
15. *Development of a shock-absorbing structure using multilayered micro-nano pattern architecture*: supported by the industry-academia collaboration grant from **Hyundai NGV, Co., Ltd. (현대엔지비)**, Sep 2018 – Mar 2019. (KRW 33,000,000)
14. *Investigation of the optimal multiplex optical nanopattern imprinting process for display application*: supported by the industry-academia collaboration grant from **Samsung Display, Co., Ltd. (삼성디스플레이)**, Mar 2018 – Nov 2018. (KRW 110,000,000)
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. (KRW 10,000,000)
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. (KRW 25,000,000)

11. *Development of application-specific nanopatterns based on nanoimprinting and continuous nanopatterning methods towards the biomimetic jumping mechanism design of robots and the novel lighting, sensing, and metasurface applications*: 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 2017 – Feb 2018. (KRW 11,250,000)
10. *Development of the RMC-integrated experimental system with precision control of radiation sources and measurement processing*: 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 2016 – Jul 2017. (KRW 25,000,000)
9. *High-throughput and energy-efficient development of flexible functional nanopatterns towards commercially-feasible lighting, heating, and sensing applications*: 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)**, Jul 2016 – Dec 2016. (KRW 12,000,000)
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. (KRW 210,000,000)
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. (KRW 55,000,000)
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. (KRW 13,450,000)
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. (KRW 10,000,000)
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. (KRW ~700,000,000 for us; KRW 14,000,000,000 in total)
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. (KRW 55,000,000)
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. (KRW 13,500,000)
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. (KRW 5,000,000)

INVITED TALKS

Individual Invitations

47. Korea Institute of Science and Technology (KIST), "Smarter, Easier, Larger, & Faster (S.E.L.F.) Multiscale Manufacturing", Seoul, Korea, May 14, 2024.
47. Kookmin University, "From fabrication to manufacturing (S-E-L-F : Smarter, Easier, Larger, & Faster)", Seoul, Korea, Jan 29, 2024.
46. Korea Institute of Science and Technology (KIST), "Smarter, Easier, Larger, Faster (S.E.L.F.) Multiscale Machining and Patterning", Seoul, Korea, Dec 18, 2023.
45. Changwon National University, "Smarter, Easier, Larger, Faster (S.E.L.F.) Multiscale Nanomanufacturing", Changwon, Gyeongsangnam-do, Korea, Nov 21, 2023.
44. Sungkyunkwan University, "Smarter, Easier, Larger, Faster (S.E.L.F.) Multiscale Manufacturing", Suwon, Gyeonggi-do, Korea, Sep 21, 2023.
43. Samsung Display, "Continuous and scalable mechanical nanopatterning with tunable period, shape, and dimension", Yongin, Gyeonggi-do, Korea, Jul 11, 2023.
42. Sungkyunkwan University, "From fabrication to manufacturing; S-E-L-F : Smarter, Easier, Larger, & Faster", Suwon, Gyeonggi-do, Korea, May 8, 2023.
41. Sungkyunkwan University, "Scalable Nanomanufacturing", Suwon, Gyeonggi-do, Korea, Jun 17, 2022.
40. Korea Research Institute of Chemical Technology (KRICT), "S-E-L-F Nanomanufacturing: Smarter, Easier, Larger, & Faster", Daejeon, Korea, Dec 13, 2021.
39. Kwangwoon University, "Facile solution-processible scratch- and cracking-proof flexible heating architectures", online, Jan 21, 2021.
38. Korea Research Institute of Standards and Science (KRISS), "Continuous Nanopatterning Processes and Applications", online, Nov 23, 2020.
37. Pohang University of Science and Technology (POSTECH), "Nanoimprinting: Convention and Beyond", Pohang, Gyeongsangbuk-do, Korea, Oct 22, 2020.
36. Gachon University, "Nanoimprinting: Convention and Beyond", Sungnam, Gyeonggi-do, Korea, Oct 21, 2020.
35. 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.
34. Hanyang University, "Multiscale, user-specific nanomanufacturing", Seoul, Korea, Oct 15, 2019.
33. UNIST (Ulsan National Institute of Science and Technology), "Multiscale nanomanufacturing for user-specific applications", Ulsan, Korea, Sep 26, 2019.
32. Kyung-In Synthetic Company (KISCO), "Smart, Multiscale, and Mass-customized Nanomanufacturing Technologies", Seoul, Korea, Jun 24, 2019.
31. Korea Institute of Machinery & Materials (KIMM), "Smart, Multiscale, and Mass-customized Nanomanufacturing Technologies", Daejeon, Korea, Apr 1, 2019.
30. Korea Institute of Industrial Technology (KITECH), Seonam Regional Division, "Smart, Multiscale, and Mass-customized Nanomanufacturing Technologies", Gwangju, Korea, Mar 28, 2019.
29. Kyung Hee University, "Smart and Mass-customized Nanomanufacturing via Hybrid Nanoarchitecturing and Continuous Nanopatterning", Yongin, Gyeonggi-do, Korea, Oct 23, 2018.
28. 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.

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

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 Sustanable Manufacturing (PRESM 2021)*, Jeju, Jeju Special Self-Governing Province, Korea, Jul 21-23, 2021.
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52. H. Choi, N. Y. Lee, G. Yeon, S. Lee, H. Jeong, and **J. G. Ok**, Uniaxial piezo vibration-driven precision continuous nanopatterning, *Korean MEMS Conference (K-MEMS) 2019*, Jeju, Jeju Special Self-Governing Province, Korea, Apr 4-6, 2019.

51. Y. J. Lee, S. Lee, N. Y. Lee, H. Jeong, W. S. Lee, I. H. Kim, J. Park, M. W. Kim, S. W. Hwang, M. Y. Lee, and **J. G. Ok**, Mold-free, period-tunable precision nanopatterning based on uniaxial vibration, *8th nano-Imprint·Molding·Print Forum (nano-IMP 2019)*, Daejeon, Korea, Feb 19, 2019.

50. G. H. Park, N. Y. Lee, H. Jeong, W. S. Lee, S. Jung, G. Yeon, H. Choi, H. S. Chae, S. Lee, D. K. Oh, and **J. G. Ok**, High-speed direct machining of period-tunable nanopatterns by the piezo actuator-driven uniaxial vibration, *Korean Society of Manufacturing Process Engineers (KSMPE) 2018 Autumn Conference*, Busan, Korea, Oct 18-19, 2018.

49. Y. J. Lee, J. W. Hur, K. Yoo, M. C. Kim, J.-H. Han, H. S. Chun, M. K. Ko, H. J. Park, B. Han, J. D. Kim, J. H. Lee, and **J. G. Ok**, Facile development of scalable nanostructures based on solution processing, *Korean Society of Manufacturing Process Engineers (KSMPE) 2018 Autumn Conference*, Busan, Korea, Oct 18-19, 2018.

48. N. Y. Lee, H. Jung, S. Lee, D. K. Oh, W. S. Lee, G. Yeon, H. Choi, and **J. G. Ok**, Direct precision indentation of period-tunable nanopatterns by the piezo actuator-driven uniaxial vibration, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2018 Annual Autumn Conference*, Seoul, Korea, Oct 4-5, 2018.

47. K. Yoo, M. C. Kim, J. W. Hur, J. D. Kim, J. H. Lee, H. S. Chun, Y. J. Lee, I. H. Kim, and **J. G. Ok**, Fabrication of scalable functional nanoarchitectures via facile solution processing, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2018 Annual Autumn Conference*, Seoul, Korea, Oct 4-5, 2018.

46. S. Lee, D. K. Oh, P. Ko, G.-S. Heo, C.-H. Yun, T.-W. Ha, D. T. Nguyen, D. H. Kim, S. Jung, H. Youn, and **J. G. Ok**, Continuous fabrication of flexible re-attachable nanopatterns via nanoinscribing and low-temperature roll imprinting, *Korean Society of Mechanical Engineers (KSME) 2018 Technical Division Conference (Micro-Nano Engineering Division)*, Busan, Korea, May 24-25, 2018.

45. J. H. Lee, D. K. Oh, S. Lee, P. Ko, G.-I. Heo, C.-H. Yun, T.-W. Ha, D. T. Nguyen, S. M. Jung, M. Na, H. Youn, and **J. G. Ok**, Development of Scalable and Flexible Re-attachable Nanopattern Patches by Continuous Processing of Nanoinsribing, Soft Lithography, and Low-temperature Roll Imprinting, *Korean Society of Precision Engineering (KSPE) 2018 Spring Conference*, Jeju, Jeju Special Self-Governing Province, Korea, May 9-11, 2018.

44. S. Lee, D. K. Oh, P. Ko, G.-S. Heo, C.-H. Yun, T.-W. Ha, D. T. Nguyen, D. H. Kim, S. Jung, H. Youn, and **J. G. Ok**, Development of a continuous nanomanufacturing process for re-attachable flexible nanopattern patches, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2018 Annual Spring Conference*, Daejeon, Korea, May 2-4, 2018.

43. D. K. Oh, S. Lee, P. Ko, G.-S. Heo, C.-H. Yun, T.-W. Ha, D. T. Nguyen, J. D. Kim, J. H. Ahn, S. Jung, H. Youn, and **J. G. Ok**, Fabrication of re-attachable ionomer nanopattern patches via continuous and scalable nanomachining processes comprising nanoinscribing and roll imprinting, *Korean Society of Manufacturing Process Engineers (KSMPE) 2018 Spring Conference*, Yeosu, Jeollanam-do, Korea, Apr 19-20, 2018.

42. J. D. Kim, J. H. Lee, D. K. Oh, S. Lee, K. Yoo, W. S. Lee, D. Kang, M. C. Kim, H. Youn, and **J. G. Ok**, Facile fabrication of metal thin films by simple metal-ion ink coating and its application-specific patterning, *Korean MEMS Conference (K-MEMS) 2018*, Jeju, Jeju Special Self-Governing Province, Korea, Apr 5-7, 2018.

41. J. H. Lee, J. D. Kim, D. K. Oh, S. Lee, K. Yoo, W. S. Lee, M. C. Kim, D. Kang, H. Youn, and **J. G. Ok**, Facile thin silver film formation via reductive ink coating and its flexible multipurpose applications through hydrothermal hybridization of functional nanowires, *7th nano-Imprint·Molding·Print Forum (nano-IMP 2018)*, Seoul, Korea, Feb 2, 2018.

40. J. D. Kim, J. H. Lee, D. K. Oh, S. Lee, K. Yoo, W. S. Lee, M. C. Kim, H. Youn, and **J. G. Ok**, Facile coating-based fabrication and patterning of thin metal films and their applications in electronics and plasmonics, *Nano Convergence Conference (NCC) 2018*, Seoul, Korea, Jan 10-11, 2018.

39. J. H. Lee, D. K. Oh, J. D. Kim, S. Lee, K. Yoo, W. S. Lee, H. Youn, and **J. G. Ok**, Facile deposition of thin metal films by reductive metal ink coating and their versatile applications incorporated with nanopatterning and hybrid nanoarchitecturing, *Korean Society of Precision Engineering (KSPE) 2017 Autumn Conference*, Gwangju, Gyeonggi-do, Korea, Dec 13-15, 2017.

38. J. D. Kim, K. Yoo, J. H. Lee, W. S. Lee, D. K. Oh, S. Lee, H. Youn, and **J. G. Ok**, Facile manufacturing of metallic thin films and nanopatterns via scalable coating of reductive metal ink and their applications in functional hybrid nanostructures comprising zinc oxide nanowires, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2017 Annual Autumn Conference*, Jeju, Jeju Special Self-Governing Province, Korea, Dec 6-8, 2017.

37. J.-S. Wi, S. Lee, S. H. Lee, D. K. Oh, K.-T. Lee, I. Park, M. K. Kwak, and **J. G. Ok**, Development of high-throughput and continuous nanomanufacturing of 3-dimensional LSPR nanoarchitectures and application to plasmonic sensors, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2017 Annual Autumn Conference*, Jeju, Jeju Special Self-Governing Province, Korea, Dec 6-8, 2017.

36. J. H. Lee, J. D. Kim, D. K. Oh, S. Lee, W. S. Lee, K. Yoo, H. Youn, and **J. G. Ok**, Facile and scalable thin metal nanopattern fabrication by reductive metal ink coating towards flexible photonic applications, *Korean Society of Mechanical Engineers (KSME) 2017 Fall Conference*, Seogwipo, Jeju Special Self-Governing Province, Korea, Nov 1-3, 2017.

35. K. Yoo, J. D. Kim, J. H. Lee, W. S. Lee, D. K. Oh, S. Lee, H. Youn, and **J. G. Ok**, Reductive silver ink-based nanopatterning and selective hydrothermal growth of zinc oxide nanowires for versatile flexible nanoelectronic applications, *Korean Society of Manufacturing Process Engineers (KSMPE) 2017 Autumn Conference*, Cheonan, Chungcheongnam-do, Korea, Oct 19-20, 2017.

34. S. Lee, D. K. Oh, J. D. Kim, J. H. Lee, and **J. G. Ok**, Characterization of nanopatterns fabricated by continuous nanoinscribing towards mass-customized applications, *Optics and Photonics Congress: 2017 Next Generation Lithography Conference (NGL 2017)*, Busan, Korea, Jul 10-12, 2017.

33. J.-S. Wi, S. Lee, J. D. Kim, S. H. Lee, D. K. Oh, K.-T. Lee, J. H. Lee, S. Koo, M. Na, K. Yoo, I. Park, M. K. Kwak and **J. G. Ok**, Scalable and facile fabrication of three-dimensional plasmonic nanoarchitectures by roll-to-roll nanoimprinting and angled metal deposition towards flexible and large-area transparent plasmonic sensors, *Korean Society of Mechanical Engineers (KSME) 2017 Technical Division Conference (Micro-Nano Engineering Division)*, Busan, Korea, May 25-26, 2017.

32. J.-S. Wi, S. Lee, J. H. Lee, S. H. Lee, D. K. Oh, K.-T. Lee, J. D. Kim, S. Koo, J. Park, J. Kim, I. Park, M. K. Kwak, **J. G. Ok**, Three-dimensional plasmonic nanoarchitectures comprising double-bent Au strips on roll-to-roll imprinted nanogratings for flexible and transparent sensors, *Korean Society of Precision Engineering (KSPE) 2017 Spring Conference*, Jeju, Jeju Special Self-Governing Province, Korea, May 17-19, 2017.

31. J. (Jeongsoo) Lee, J. (Jihun) Lee, D. K. Oh, S. Nam, S. Cho, Y. Jo, M. Go, J. D. Kim, J. H. Lee, S. Lee, Y. K. Lee, D. H. Kim, and **J. G. Ok**, Development of a desktop roll-to-roll nanoimprinting station for continuous nanopatterning, *Korean Society of Manufacturing Process Engineers (KSMPE) 2017 Spring Conference*, Jeonju, Jeollabuk-do, Korea, Apr 13-14, 2017.

30. J.-S. Wi, D. K. Oh, S. H. Lee, S. Lee, K.-T. Lee, J. D. Kim, J. H. Lee, J. H. Ahn, W. S. Lee, K. M. Jee, I. Park, M. K. Kwak, and **J. G. Ok**, Continuous fabrication of 3D LSPR structure on large-area flexible substrates based on roll-to-roll nanoimprinting and angled metal deposition for transparent sensors, *Korean Society of Manufacturing Process Engineers (KSMPE) 2017 Spring Conference*, Jeonju, Jeollabuk-do, Korea, Apr 13-14, 2017.

29. S. Lee D. K. Oh, J. D. Kim, J. H. Lee, and **J. G. Ok**, Development of a nanoinscribing-based continuous and high-throughgput nanopatterning system, *Korean MEMS Conference (K-MEMS) 2017*, Jeju, Jeju Special Self-Governing Province, Korea, Mar 30-Apr.1, 2017.

28. J.-S. Wi, S. Lee, S. H. Lee, D. K. Oh, K.-T. Lee, I. Park, M. K. Kwak, J. H. Ahn, and **J. G. Ok**, Three-dimensional nanoarchitecturing of double-bent Au strips on roll-to-roll nanoimprinted gratings for scalable and flexible plasmonic sensors, *Nano Convergence Conference (NCC) 2017*, Seoul, Korea, Feb 22-23, 2017.

27. S. Lee, D. K. Oh, J. D. Kim, J. H. Lee, M. Na, J. Kim, W. S. Lee, D. H. Kim, and **J. G. Ok**, High-speed fabrication of controlled nanopatterns by continuous nanoinscribing on flexible substrates using a nanostructured mold edge, *Nano Convergence Conference (NCC) 2017*, Seoul, Korea, Feb 22-23, 2017.

26. S. Koo, S. H. Lee, J. D. Kim, J. G. Hong, H. W. Baac, M. K. Kwak, J. H. Lee, K. Yoo, and **J. G. Ok**, Thin film deposition by simple airbrushing and its application in continuous Roll-to-Roll nanoimprinting with controlled residual layer thickness, *Nano Convergence Conference (NCC) 2017*, Seoul, Korea, Feb 22-23, 2017.

25. J.-S. Wi, D. K. Oh, S. H. Lee, S. Lee, K.-T. Lee, I. Park, M. K. Kwak, J. D. Kim, J. H. Lee, and **J. G. Ok**, Fabrication and application of 3D LSPR structures on large-area flexible substrates based on roll-to-roll nanoimprinting and angled metal deposition process, *6th nano-Imprint·Molding·Print Forum (nano-IMP 2017)*, Seoul, Korea, Feb 15, 2017.

24. S. Lee, D. K. Oh, J. D. Kim, J. H. Lee, K. Yoo, J. H. Ahn, M. Na, J. Kim, and **J. G. Ok**, Fabrication and application of flexible nanopatterns based on continuous nanoinscribing, *6th nano-Imprint·Molding·Print Forum (nano-IMP 2017)*, Seoul, Korea, Feb 15, 2017.

23. S. Lee, D. K. Oh, J. (Jaekyu) Park, J. D. Kim, J. H. Lee, and **J. G. Ok**, Development of a continuous and high-throughput nanopatterning system by utilizing mechanical inscribing, *Korean Society of Mechanical Engineers (KSME) 2016 Fall Conference*, Jeongseon, Gangwon-do, Korea, Dec 14-16, 2016.

22. D. K. Oh, S. Lee, J. (Jaekyu) Park, J. D. Kim, J. H. Lee, M. Na, J. Kim, K. Yoo, J. H. Ahn, and **J. G. Ok**, Development of a high-speed and scalable nanopatterning system based on continuous nanoinscribing, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2016 Annual Autumn Conference*, Jeju, Jeju Special Self-Governing Province, Korea, Nov 2-4, 2016.

21. J. H. Lee, T. J. Park, S. M. Choi, D. K. Youn, S. Lee, D. K. Oh, J. (Jaekyu) Park, J. D. Kim, H. K. Lee, J.

(Junyong) Park, and **J. G. Ok**, Formulation of vertically-aligned nanostructures to thin-film frameworks by controlled mechanical rolling, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2016 Annual Autumn Conference*, Jeju, Jeju Special Self-Governing Province, Korea, Nov 2-4, 2016.

20. S. Lee, J. D. Kim, D. K. Oh, J. H. Lee, and **J. G. Ok**, Development of a high-throughput nanopatterning system by utilizing continuous mechanical nanoinscribing (Capstone Design Contest), *Korean Society of Precision Engineering (KSPE) 2016 Autumn Conference*, Yeosu, Jeollanam-do, Korea, Oct 26-28, 2016.
19. J. H. Lee, S. Lee, D. K. Oh, J. (Jaekyu) Park, J. D. Kim, J. (Junyong) Park, H. K. Lee, M. Na, J. Kim, and **J. G. Ok**, Development of a high-throughout nanopatterning system utilizing the plastic deformation by continuous inscribing of rigid mold edges on flexible substrates (Capstone Design Contest), *Korean Society of Manufacturing Process Engineers (KSMPE) 2016 Autumn Conference*, Busan, Korea, Oct 13-14, 2016.
18. S. Lee, T. J. Park, S. M. Choi, D. K. Youn, J. (Jaekyu) Park, J. H. Lee, J. D. Kim, H. K. Lee, K. Yoo, and **J. G. Ok**, Controlled mechanical rolling of as-grown vertically aligned nanostructures to multifunctional thin-film frameworks, *Korean Society of Manufacturing Process Engineers (KSMPE) 2016 Autumn Conference*, Busan, Korea, Oct 13-14, 2016.
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16. J. H. Lee, S. H. Lee, S. Koo, J. D. Kim, J. G. Hong, H. W. Baac, M. K. Kwak, and **J. G. Ok**, Airbrush coating of concentration-controlled polymer resists for scalable and residual layer-controllable Roll-to-Roll nanoimprinting, *Korean Society of Mechanical Engineers (KSME) 2016 Technical Division Conference (Micro-Nano Engineering Division)*, Busan, Korea, May 19-20, 2016.
15. J. D. Kim, S. H. Lee, S. Koo, J. H. Lee, J. G. Hong, H. W. Baac, M. K. Kwak, and **J. G. Ok**, Thickness-adjustable resin coating and residual layer-controlled Roll-to-Roll nanoimprinting by the airbrushing method, *Korean Society of Precision Engineering (KSPE) 2016 Spring Conference*, Jeju, Jeju Special Self-Governing Province, Korea, May 11-13, 2016.
14. J. D. Kim, S. H. Lee, S. Koo, J. H. Lee, J. G. Hong, H. W. Baac, M. K. Kwak, and **J. G. Ok**, Airbrushing-based deposition of nanoscale thin films comprising non-volatile resin and volatile solvent and application in residual layer-controlled Roll-to-Roll nanoimprinting process, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2016 Annual Spring Conference*, Daejeon, Korea, Apr 27-29, 2016.
13. S. Koo, S. H. Lee, J. D. Kim, J. G. Hong, H. W. Baac, M. K. Kwak, and **J. G. Ok**, Controlled airbrushing for scalable nanoscale thin film formation and its application in continuous Roll-to-Roll nanoimprinting for simple residual layer thickness control, *Korean MEMS Conference (K-MEMS) 2016*, Jeju, Jeju Special Self-Governing Province, Korea, Apr 7-9, 2016.
12. S. Koo, S. H. Lee, J. D. Kim, J. G. Hong, H. W. Baac, M. K. Kwak, and **J. G. Ok**, Controlled airbrushing of nanoimprinting resist material solutions for continuous thin film coating and regimented residual layer control in Roll-to-Roll nanoimprinting, *5th nano-Imprint·Molding·Print Forum (nano-IMP 2016)*, Daejeon, Korea, Feb 17, 2016.
11. **J. G. Ok**, A. Panday, L. Chen, T. Lee, M. K. Kwak, and L. J. Guo, Scalable fabrication of two-dimensional nanopatterns by sequential combination of continuous one-dimensional nanopatterning strokes, *5th nano-Imprint·Molding·Print Forum (nano-IMP 2016)*, Daejeon, Korea, Feb 17, 2016.
10. **J. G. Ok**, A. Panday, L. Chen, T. Lee, M. K. Kwak, and L. J. Guo, Continuous and high-throughput multidimensional nanopatterning via dynamic nanoinscribing and its application in electronics and biosensing frameworks, *Nano Convergence Conference (NCC) 2016*, Seoul, Korea, Jan 21-22, 2016.
9. S. Koo, S. Lee, J. Park, J. D. Kim, H. K. Ji, J. Y. Jeon, J. Park, J. H. Lee, D. K. Youn, and **J. G. Ok**, Design and buildup of multipurpose desktop continuous nanopatterning station, *Korean Society of Manufacturing Technology Engineers (KSMTE) 2015 Annual Fall Conference*, Jeju, Jeju Special Self-Governing Province, Korea, Oct 14-16, 2015. http://www.dbpia.co.kr/Article/NODE06526654

8. **J. G. Ok**, M. K. Kwak, and L. J. Guo, Continuous fabrication and application of scalable nanostructures and multidimensional nanopatterns, *Korean Society of Mechanical Engineers (KSME) 2015 Technical Division Conference (Micro-Nano Engineering Division)*, Busan, Korea, May 21-22, 2015.
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
Semiconductor Process Laboratory	since Fall 2021
Advanced Micro/Nano Technology	since Summer 2021
Introduction to Semiconductor Manufacturing Process	since Summer 2021
Introduction to Measurement and Analysis	since Spring 2021

Mechanical and Automotive Engineering

Automotive Engineering Lab.(2)	Fall 2020
Engineering Mathematics (1)	Spring 2018
Ultra-precision Manufacturing Technology (Graduate)	since Spring 2016
Special Manufacturing Process (Graduate)	Spring 2015
Automotive Computer Aided Design	since Spring 2015
Automotive Drawing	since Fall 2014

Engineering Design Process since Fall 2014
Elementary Shop Practice Fall 2014

Invited Lecturer/Tutor

MEU6430: Micro and Nano Molding Process, Yonsei University 2019, 2021, 2023
- Lecture title: "Multiscale Nanopatterning: Nanoimprinting and Beyond" (Nov 26, 2019; Nov 30, 2021; Nov 1, 2023).

MEMS Processing Educational Seminar Series, SEOULTECH 2015–2021
- Deposition-based fabrication technologies and direct applications (반도체/MEMS 증착공정 및 응용)

S+ MEMS Processing Educational Seminar Series, SEOULTECH 2019–2020
- Deposition (반도체/MEMS 증착공정)

181107 Semiconductor Device Packaging, SEOULTECH 2020
- Lecture title: "Multiscale Nanopatterning: Nanoimprinting and Beyond" (Jan 7, 2020).

9680004: Manufacturing Systems Engineering, SEOULTECH 2017
- Lecture title: "Smart and Mass-customized Nanomanufacturing" (Nov 15, 2017).

nCOMS Manufacturing Tutorial, 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: Principles of Microelectronics Process Technology, University of Michigan 2013
- Lecture title: "Non-conventional micro/nano-fabrication technologies based on mechanical deformation" (Feb 22, 2013).

Graduate Degree Advisor

Kwangjun Kim, Ph.D., SEOULTECH Fall 2024–
- Thesis: TBA (??? 202?)

Yongtae Kim, Ph.D., SEOULTECH Fall 2023–
- Thesis: TBA (??? 202?)

Minwook Kim, Ph.D., SEOULTECH Spring 2023–
- Thesis: TBA (??? 202?)

Kwangjun Kim, M.S., SEOULTECH Spring 2022–Spring 2024
- Thesis: TBA (Aug 2024)

Minwook Kim, M.S., SEOULTECH Spring 2021–Fall 2022
- Thesis: Solution-Processable Metal-Carbon Nanotube-Nanowire-Based Functional Hybrid Architectures (Feb 2023)

Dong Kyo Oh, M.S., SEOULTECH Spring 2017–Fall 2018
- Thesis: Optimization of Continuous Nanoinscribing and Roll-to-Roll Nanoimprinting Processes for Scalable Fabrication of Flexible Nanopatterns towards Large-area Displays and Biosensors (Feb 2019)

Seungjo Lee, M.S., SEOULTECH Spring 2017–Fall 2018
- Thesis: Development of Continuous High-precision Nanopatterning Methodologies by Utilizing Direct Mechanical Machining and their Application in Flexible and Re-attachable Photonic Devices (Feb 2019)

Jaehyuk Lee, M.S., SEOULTECH Spring 2017–Fall 2018
- Thesis: Engineering of Carbon Nanotube Architectures via Patterning, Rolling, and Coating towards Diverse Functional Devices Involving Light Absorbers and Sensors (Feb 2019)

Jeong Dae Kim, M.S., SEOULTECH Spring 2017–Fall 2018
- Thesis: Facile All-Solution-Processable Fabrication of Functional Metallic Nanofilms and Nanostructures and Their Application in Transparent and Wearable Electronics (Feb 2019)

Undergraduate Research Project Advisor

Capstone Design, SEOULTECH since 2015

- Fabrication and characterization of flexible stretchable strain sensor devices 2024
  (J. Hong, S. Eum, and K. Jung)
- Development of high-sensitivitiy gas sensors by utilizing carbon nanotubes and metal oxide nanomaterials 2024
  (J. Roh and J. Lee)
- Development of energy harvesting devices based on piezoelectric particle-carbon nanotube hybrid architectures
  (J. Park and K. Lee) 2024
- Development of high-performance optical filters based on AI technology 2024
  (H. Park and J. Lee)
- Development of high-performance gas sensors by using carbon nanotube microarchitectures 2023
  (J. Yang, J. Han, and Y. Heo)
- Development of piezoelectric-triboelectric-hybrid energy harvesters by utilizing micropatterned film-elastomeric sponge-layered structures (H. Baek, C. Lee, and H. Jung) 2023
- Development of anti-icing surfaces utilizing nanoscale patterns and topographic structures 2023
  (T. Kim, S. Lee, and H. Lee)
- Development of the power-efficient gas sensors based on nanostructures 2022
  (W. Lee, D. Jeong, and G. Jo)
- Development of solution-processed nanohybrid-based flexible sensors 2022
  (H. Kim, H. Son, and H. Ji)
- Development of smart sensors by utilizing hybrid architectures comprising nanowires on microelectrodes 2021
  (I. Han, J. Song, and U. Lee)
- Development of transparent flexible heaters by metal nanopattern printing and imprinting for future vehicles 2021
  (H. Noh and B. Youn)
- Optimization and application of carbon nanotube growth on the micropatterned catalyst architectures 2021
  (K. Kim, E. Jeong, and K. Choi)
- Development of solution process-based functional nanoarchitecturing system 2020
  (H. Choi, H. Chae, and M. Lee)
- Development of high-performance heaters based on layered coatings comprising CNTs and thin metal films 2020
  (M. Kim, B. Han, and M. Park)
- Study on the multiscale carbon nanotube structures involving solution coating and micropatterns 2020
  (I. Kim and S. Hwang)
- Development of high-throughput and scalable nanopatterning system for mobile devices 2020
  (J. (Jonggab) Park, M. Kim, and J. Choi)
- Direct micromachining of microtrenches and slanted micropatterns on difficult-to-machine materials 2020
  (N. Lee and J. (Jaewon) Park)
- Sophistication of the automated roll-to-roll nanoimprinting system for scalable and flexible nanopatterning with improved precision and reproducibility (S. Lee and H. Kim) 2019
- Fabrication of functional metallic nanopatterns by applying nanoinscribing and vibrational indentation on metallic thin films towards flexible nanophotonic devices (W. Lee and H. Chun) 2019
- Shape-tunable nanopatterning and its process optimizaton by utilizing nanoinscribing and vibrational indentation patterning (G. Yeon and M. K. Ko) 2019
- Facile fabrication and flexible photonic device application of metal ink-reduced nanoporous metallic nanostructures and hydrothermally grown nanowires (K. Yoo, M. C. Kim, and D. Kang) 2018
- Synthesis, patterning, and application of two-dimensional transiton metal dichalcogenides (TMDCs) by chemical vapor deposition (J. H. Ahn, J.-H. Han, and H. K. Ji) 2018
- Thin-film engineering of carbon nanotube architectures via coating and rolling for functional thin film devices 2018
  (J. W. Hur and J. (Jungwoo). Kim)
- Process optimization of Dynamic Nano Inscribing (DNI) and its application in flexible nanopattern devices 2018
  (D. H. Kim, S. Jung, and S. K. Moon)
- Development of a continuous nanopattern indentation system driven by high-frequency vibration of a rigid tool edge
  (J. (Jiyeop) Kim, K. Jee, and Y. K. Lee) 2017
- Development of a LabView-controlled automated CVD system for reliable and reproducible nanostructure synthesis
  (S. Koo, M. Na, and H. K. Ji) 2017

- Fabrication and application of flexible and scalable nanopatterns by continuous roll-to-roll nanoimprinting (C. H. Moon, T. Kim, and J. Hwang) 2017
- Multiscale high-throughput nanopatterning by continuous mechanical machining protocols (S. Lee, D. K. Oh, J. (Jaekyu) Park, and J. (Junyong) Park) 2016
- Synthesis and application of functional nanoarchitectures by chemical vapor deposition and other methods (J. D. Kim, D. K. Youn, J. H. Lee, and H. K. Lee) 2016
- Development of flexible large-area nanopatterns by Roll-to-Roll nanoimprinting (J. (Jeongsoo) Lee, S. Nam, and Y. Jo) 2016
- Design and buildup of desktop roll-to-roll printing machine (J. (Jihun) Lee, S. Cho, and M. Go) 2015
- Design and buildup of desktop nanostructure rolling station (T. J. Park and S. M. Choi) 2015

Industry-cooperative Capstone Design*, SEOULTECH Fall 2015

- Development of a vibrational indentation nanopatterning module (J. D. Kim, S. Koo, J. Park, and T. Eom*)
- Multipurpose Desktop Continuous Ultraprecision Machining Station (S. Lee, J. D. Kim, J. Park, D. K. Youn, J. H. Lee, H. K. Ji, J. Shin, M. Jang, T. Eom*, and K. Eom*)

Pre-Capstone Design, SEOULTECH Spring 2015

- Design of simple and efficient nanopatterning methodologies (S. Koo, J. Park, S. Lee, and J. Y. Jeon)

Graduate Research Project Supervisor (as a senior graduate) University of Michigan

Independent Study Projects Fall-Winter 2009

- Parametric Study of Vanadium Oxide Nanoribbon Growth on Aligned Carbon Nanotubes (A. A. McLane).
- Compressive Properties of Vertically Aligned Carbon Nanotube Forests under Quasi-Static Conditions (V. Chhajer).
- Parametric study of Zinc and Tin Oxide Nanowire growth (D. T.-P. Cheng).
- Interpenetration of Carbon Nanotube and/or Zinc Oxide Nanowire Forests with Each Other (J. Lefevre).
- System for Dynamically-Controlled Growth of Hybrid Nanostructure Arrays (Part II) (B. J. Coffer, C. Zhang, E. N. Sihite, and M. M. Gozum) – finalized in Spring/Summer 2009 (J. H. Taphouse).

Design and Manufacturing Fall 2008

- System for Dynamically-Controlled Growth of Hybrid Nanostructure Arrays (Part I) (B. J. Coffer, C. Zhang, E. N. Sihite, and M. M. Gozum).

Summer Undergraduate Research Assistant (SURA) program Summer 2008

- Hybrid nanostructured films for energy conversion and storage (J. Li).

Teaching Assistant Seoul National University

Micro-nano Mechanics Spring 2006

Solid Mechanics Spring 2006

Finite Element Method in Aerospace Engineering Fall 2005

Mechanics and Design Fall 2005

PROFESSIONAL SERVICES

Board Member

마이크로나노시스템학회 (총무이사) Society of Micro and Nano Systems (SMNS) since 2019

한국생산제조학회 (재정부회장·편집이사) 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

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

Journal Reviewer

International

Chemistry – A European Journal since 2024
Separation and Purification Technology since 2024
ACS Applied Electronic Materials since 2024
Advanced Functional Materials since 2024
Advanced Science since 2024
Small Methods since 2023
Nanophotonics since 2023
Soft Science since 2023
ACS Applied Nano Materials since 2023
Science and Technology of Advanced Materials since 2023
Materials & Design since 2023
Small Science since 2023
Functional Composites and Structures since 2023
ACS Applied Engineering Materials since 2023
Langmuir since 2023
Ceramics International since 2022
Optics Express since 2022
IEEE Photonics Technology Letters since 2022
Advanced Materials since 2022
Friction since 2022
Light: Science & Applications since 2021
Small since 2021

Microsystems & Nanoengineering	since 2021
Advanced Materials Technologies	since 2021
Scientific Reports	since 2021
Surfaces	since 2020
Sensors	since 2020
Nanomaterials	since 2020
Micro and Nano Systems Letters	since 2020
Smart Materials and Structures	since 2020
Cold Regions Science and Technology	since 2020
ASME Journal of Micro- and Nano-Manufacturing	since 2020
Lab on a Chip	since 2020
Carbon	since 2019
IEEE Access	since 2019
Optics Communication	since 2019
Materials Research Express	since 2019
Soft Matter	since 2019
Journal of Micromechanics and Microengineering	since 2019
Molecular Systems Design & Engineering	since 2019
Nature Communications	since 2018
Optics and Laser Technology	since 2018
Polymers	since 2017
Sensors and Actuators A: Physical	since 2017
International Journal of Precision Engineering and Manufacturing	since 2017
Micromachines	since 2016
Journal of Nanoscience and Nanotechnology	since 2016
Nano Convergence	since 2016
International Journal of Precision Engineering and Manufacturing–Green Technology	since 2016
Nanoscale	since 2015
ACS Applied Materials & Interfaces	since 2015
RSC Advances	since 2015
Applied Thermal Engineering	since 2015
Journal of Mechanical Science and Technology	since 2014

Domestic

Composites Research	since 2023
Korean Journal of Metals and Materials	since 2020
Transactions of the Korean Society of Mechanical Engineers	since 2018
Journal of the Korean Society of Manufacturing Process Engineers	since 2017
Journal of Sensor Science and Technology	since 2016
Journal of the Korean Society of Manufacturing Technology Engineers	since 2015
Journal of the Korean Society for Precision Engineering	since 2015

Department Chair

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

Program Director, Accreditation Board for Engineering Education of Korea (ABEEK; 공학인증)

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

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.