

SEUNGMAN CHOI

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EDUCATION & WORKING

Purdue University

PhD. in electrical and computational engineering department (GPA 3.94/4.00)

West Lafayette, IN

Apr 2022- Current

Super-resolution imaging through turbulence for space situational awareness

Developed a computational imaging algorithm for extreme and information-starved imaging scenarios [1,2,5].

Korea Advanced Institute of Science and Technology (KAIST)

Research associate in Mechanical engineering department

Daejeon, KR

Apr 2019- Aug 2022

Optical tool development for semiconductor inspection

Achieved higher spatial resolution than existing EUV cameras by combining an EUV light-control architecture with computational imaging techniques [3,6,7,8].

Tokyo Institute of Technology (Ti-tech)

M.S & B.S in Mechanical Engineering (Magna Cum Laude)

Tokyo, JP

Apr 2013- Mar 2019

Scaled-up Microfluidic device using semiconductors manufacturing technique

Developed a microfluidic device for large-scaled droplet generation [4].

Advanced gripping system for semiconductors with complex shapes

Developed a damage-free electrostatic gripper for small and flexible wearable devices [9,10].

RELATED PUBLICATIONS LIST

†: Equally contributed to works.

- [1] S. Choi, et al, “Poisson wavefront imaging in photon-starved scenarios”, *J. Opt. Soc. Am. B*, 43, 231-238 (2026).
- [2] S. Choi, et al, “Photon-starved imaging through turbulence at the diffraction limit”, <https://arxiv.org/abs/2510.22806>, 2025.
- [3] S. Won, J. Kim, Y. Oh, T. Kim, S. Choi, et al, “Programmable structured DUV illumination by coherent harmonic generation at crystalline solids for nanometer-resolution inspection of periodic samples” *PhotoniX*, 6(1), 1-15, 2025.
- [4] N. Tottori, S. Choi, et al. “Production of monodisperse oil-in-water droplets and polymeric microspheres below 20 µm using a PDMS-based step emulsification device”. *Micromachines*, 16(2), 132, 2025.
- [5] H. Choi†, S. Choi†, et al, “Telescope imaging beyond the Rayleigh limit in extremely low SNR”, *New Journal of Physics* 26 (9), 093019, 2024.
- [6] B. Kim†, S. Choi†, et al, "Coherent manipulation of extreme-ultraviolet Bessel vortex beam from solids by active wavefront shaping of driving fundamental beam" *ACS Photonics*, 10.1021/acspophotonics.3c00645, 2023.
- [7] S. Won†, S. Choi†, et al, “Dynamic ultraviolet harmonic beam pattern control by programmable spatial wavefront modulation of near-infrared fundamental beam” *Nanophotonics*, 12 16, 2023.
- [8] Y. Kim†, B. Kim†, S. Choi†, et al, “Compensation of laser propagation effects within solids for high harmonic generation of extreme ultraviolet radiation” *Opt. Laser Technol.*, 148 107507, 2022.
- [9] Y. Taoka, K. Kawabata, P. Hemthavy, S. Choi, et al. “Development of Bipolar Electrostatic Chuck with a Beam-Array Assembly Fabricated by Lithography”. *International Journal of Automation Technology*, 16(4), 471-477, 2022.
- [10] S. Choi, et al “Development of a bipolar electrostatic chuck module with a beam-array assembly using the multiple etching process”, *J. Micromech. Microeng.* 28 125011, 2018,

AWARDS & GRANT

[1] Bilsland Fellowship	Jan 2027–Mar 2027	KR.
Elmore Family School of Electrical and Computer Engineering, Purdue University, \$31,000 for a semester. (Pre-selected).		
[2] Outstanding Presentation Award	Feb 2025	[8] Excellence Presentation Award Feb 2019 2019KSEAJ, JP.
The 10th 2025NCC, KR.		[9] ITO scholarship Apr 2017–Mar 2019 ITO Foundation for International Education Exchange, JPY 180,000 per month, JP.
[3] Outstanding Presentation Award	Nov 2024	[10] Tour grant Aug 2018 The Precise Measurement Technology Promotion Foundation (PMTP-F), JPY 197,000 once, JP.
Autumn 2025KSPE, KR.		[11] MutoEiji academic excellence award Mar 2017 The Japan Society for Design Engineering (JSDE), JP.
[4] Best Presentation Award	May 2023	[12] KR-JP joint scholarship Apr 2013–Mar 2017 Korea and Japan Government, JPY 130,000 per month, KR&JP.
The 18th 2023IEEE-NEMS, KR.		
[5] Best Paper Award	Nov 2022	
The 9th 2022ASPEN, SG.		
[6] Bronze Prize	Nov 2022	
Autumn 2022KSME, KR.		
[7] Best Paper Award	Nov 2021	
Next generation lithography conference (2021OSK),		

TEACHING EXPERIENCE

Course: [ECE 20001] Electrical Engineering Fundamentals I (Spring 2024)

Responsibilities: Graduate teaching assistants, explaining the course material and answering questions in office hours.

SKILLS

Programming/software skills: Python, Matlab, LabView, ANSYS Lumerical/Mechanical, COMSOL Multiphysics, Solidworks.

Experimental Technique: Semiconductor manufacturing technique (Photo-lithography), optical system design (Vacuum system, microscopy, telescopic), optical defect measurement (Optical interferometry, scanning electron microscopy, focused-ion beam).