List of publications

Journal Articles

1. Yizhao Guan, Shuzo Masui, Shotaro Kadoya, Masaki Michihata and Satoru Takahashi, "Super-resolution Imaging of Sub-diffraction-limited Pattern with Superlens based on Deep Learning", *International Journal of Precision Engineering and Manufacturing (IJPEM)*, 1-10, 2024
2. Yizhao Guan, Shuzo Masui, Shotaro Kadoya, Masaki Michihata and Satoru Takahashi, "Super-resolution by Localized Plasmonic Structured Illumination Microscopy using Self-Assembled Nanoparticle Substrates", *Nanomanufacturing and Metrology*,7(1), 14, 2024
3. Yizhao Guan, Shotaro Kadoya, Masaki Michihata, Satoru Takahashi, "The FDTD analysis for dark field in-process depth measurements of fine microgrooves", *Measurement: sensors*, Volume 18, 2021, 100257.
4. Yizhao Guan, Hiromasa Kume, Shotaro Kadoya, Masaki Michihata and Satoru Takahashi, "The FDTD analysis of near-field response for microgroove structure with standing wave illumination for the realization of coherent structured illumination microscopy", *Journal of Manufacturing Science and Engineering*, Vol. 144, Issue 3 (2022) 031004.
5. Yizhao Guan, Shuzo Masui, Shotaro Kadoya, Masaki Michihata and Satoru Takahashi, "Smart optical measurement probe for autonomously detecting nanodefects on bare semiconductor wafer surface: highly sensitive observation system using phase-contrast microscopy with a spatial light modulator", 2022 J. Phys.: Conf. Ser. 2368 012014.

International Conferences

1. Yizhao Guan, Shuzo Masui, Shotaro Kadoya, Masaki Michihata, and Satoru Takahashi, "Super-resolution Imaging of Sub-diffraction-limited Pattern with Superlens based on Deep Learning." *International Symposium on Measurement Technology and Intelligent Instruments (ISMTII 2023)*, A084, September 2023, Seoul, Korea. (Best Paper Award)
2. Yizhao Guan, Shuzo Masui, Shotaro Kadoya, Masaki Michihata, and Satoru Takahashi, "Numerical simulation of self-assembled nanoparticles substrate for plasmonic structured illumination microscopy", *Leading Edge Manufacturing/Material and Processing (LEM&P 2023)*, June 2023, New Brunswick, New Jersey, USA.
3. Yizhao Guan, Shuzo Masui, Shotaro Kadoya, Masaki Michihata, and Satoru Takahashi, "Optical Depth Measurement for Microgrooves: A Self-interferometry Method based on Near-field Polarization Analysis." *Asian Society for Precision Engineering and Nanotechnology (ASPEN 2022)*, OR-15-0084, November 2022, Singapore. (Best Paper Award)

4. Yizhao Guan, Shuzo Masui, Shotaro Kadoya, Masaki Michihata, and Satoru Takahashi, "Smart optical measurement probe for autonomously detecting nano-defects on bare semiconductor wafer surface: highly sensitive observation system using phase-contrast microscopy with a spatial light modulator", *The 11th Global Conference on Materials Science and Engineering (CMSE 2022)*, September 2022, Shenzhen, China.

5. Yizhao Guan, Shotaro Kadoya, Masaki Michihata, and Satoru Takahashi, "The FDTD analysis for dark field in-process depth measurements of fine microgrooves", *Proc, the IMEKO world congress*, August 30 - September 3, 2021, Yokohama, Japan.

6. Yizhao Guan, Hiromasa Kume, Shotaro Kadoya, Masaki Michihata, and Satoru Takahashi, "The FDTD analysis of near-field response for microgroove structure with standing wave illumination for the realization of coherent structured illumination microscopy", *Proceedings of the ASME 2021, 16th International Manufacturing Science and Engineering Conference MSEC2021*, June 21 − 25, 2021, Virtual, Online, MSEC2021-60409.

7. Yizhao Guan, Hiromasa Kume, Shotaro Kadoya, Masaki Michihata, and Satoru Takahashi, "The FDTD analysis for limited microgroove structure with standing wave illumination for the realization of coherent structured illumination microscopy", *Proc. SPIE structured light at Optics and Photonics International Congress/ Optical Technology and Measurement for Industrial Applications Conference (OPTM)*, April 22 − 26, 2019, Yokohama, Japan., OPTM-5-03.

Conferences in Japan

1. Japan Society of Mechanical Engineers (JSME) Tohoku *September 2018*
   First Principle Calculation on the Electrical Conductivity of Dumbbell-shape Graphene Nano-Ribbon.
2. Japan Society of Mechanical Engineers Computational Mechanics Division (CMD) *September 2019*
   Effect of Strain on the Gas Adsorption of Graphene: A First Principle Study
3. The Japan Society for Precision Engineering (JSPE) *September 2020*
   The FDTD Analysis of Near-field Response for Microgroove Structure with Standing Wave Illumination
4. The Japan Society for Precision Engineering (JSPE) *March 2021*
   The FDTD Analysis of Near-field Response for Microgroove Structure with Standing Wave Illumination (2nd) -The Relationship of Microgroove Depth and Near-field Phase Response
5. Optics & Photonics Japan (OPJ) *September 2020*
   Optical FDTD Analysis of Surface Microstructure for Coherent Structured Illumination Microscopy
6. The Japan Society for Precision Engineering (JSPE) *March 2022*
   Near-field Phase Analysis of Periodic Microgroove Structure for Metasurface Design based on FDTD Simulation
7. The Japan Society for Precision Engineering (JSPE) *March 2022*
   Study on the Detection of Nanoscale Foreign Objects by Autonomous Defect Exploration and Split-Type Multi-Probe (Report 11) - High Sensitivity Detection of Liquid Phase Probes by Spatial Optical Phase Modulation (In Japanese)

Awards

- Best paper awards, Asian Society for Precision Engineering and Nanotechnology (ASPEN), 2022
- Best paper awards, International Symposium on Measurement Technology and Intelligent Instruments (ISMTII), 2023
- Best paper awards,2024 Japan Society for Precision Engineering Conference
- Certificate of Appreciation from the Japan Society for Precision Engineering for participation in an international competition

Patents

- **Title of Invention**: Data Generation Device for Machine Learning, Method for Creating Data for Machine Learning, Learning Model, Observation Device, and Device for Estimating Irradiation Patterns of Energy Beams

Inventors: Satoshi Takahashi, Yizhao Guan, Shotaro Kadoya, Masaki Michihata
Applicant: The University of Tokyo (National University Corporation)
Application Number: PCT/JP2024/014094 (World Intellectual Property Organization)
Filing Date: April 5, 2024

- **Title of Invention:** Optical Wave Measurement Method and Apparatus

Inventors: Satoshi Takahashi, Ryusho Akao, Shotaro Kadoya, Masaki Michihata, Yizhao Guan
Applicant: The University of Tokyo (National University Corporation)
Application Number: 63/557709 (United States)
Filing Date: February 26, 2024