Hyeongjoon Kim

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PROFESSIONAL SUMMARY

Process Engineer with combined experience in semiconductor and display process optimization, specializing in reactive ion etch, process integration, and yield improvement. Experienced in SEM, TEM, Ellipsometry, AFM, and Python/JMP/Spotfire–based data analysis to identify root causes and drive robust process improvements across both R&D pathfinding and high-volume manufacturing.

EDUCATION

Purdue University | West Lafayette, IN   GPA: 3.89 / 4.00
Master of Science in Materials Engineering   Expected May 2026

Dongguk University | Seoul, Republic of Korea
Bachelor of Science in Energy and Materials Engineering   Aug 2020

PROFESSIONAL EXPERIENCE

Applied Materials | Gloucester, Massachusetts
Process Engineer Co-op   Jul 2025 – Jan 2026
- Developed DOE-based reactive ion etch processes by tuning plasma and ion beam parameters to achieve target etch profiles
- Characterized film thickness, uniformity, and etch profiles using Ellipsometry, SEM, and TEM, enabling process optimization and hardware performance evaluation
- Analyzed chamber conditions and correlated tool state variations with process performance
- Developed an automated Python-based TEM etch-profile analysis script, reducing analysis time by 97% and enabling data-driven process optimization
- Generated technical reports and internal documentation for customer demonstrations

LG Display | Paju, Republic of Korea
Process Integration Engineer   Jun 2021 – Aug 2024
- Conducted root cause and failure analysis using SEM, FIB, TEM, and AFM, supported by Spotfire, JMP, and Minitab–based data analysis, to drive yield improvements
- Analyzed process trends and metrology data (thickness, uniformity, particle levels) through SPC-based monitoring to enhance key unit process performance
- Validated new equipment and process conditions for mass production readiness, ensuring process stability, throughput, and reliability
- Reduced particle-related defects, refined inspection logic, and collaborated with cross-functional teams to confirm root causes and implement corrective actions, improving product yield

DS Neolux | Cheonan, Republic of Korea
Quality Engineer   Oct 2020 – May 2021
- Analyzed experimental and field-return data to qualify OLED products and resolve reliability issues
- Performed optical, electrical, and lifetime characterization to identify early failure signatures
- Operated thermal evaporators and vacuum systems to conduct device evaluation

SKILLS

- Process & Manufacturing: DOE, SPC, Root Cause Analysis, Yield Improvement, Reliability Testing, Plasma Etching, Thin-Film Deposition, Lithography Fundamentals
- Characterization: SEM, FIB, TEM, AFM, Ellipsometry, XRD
- Data & Software: Python, JMP, Spotfire, Minitab, ImageJ, Quartz PCI, MS Office

PROJECTS

Via Etch Optimization │ Applied Materials │ SEM, TEM, Ellipsometry, JMP
- Developed via etch processes to achieve target etch profiles for advanced patterning applications
- Evaluated key plasma and process parameters to balance etch profile, rate, and directionality
- Analyzed SEM/TEM/ellipsometry and process log data to optimize etch conditions

TEM Measurement Automation │ Applied Materials │ TEM, Python, ImageJ, Quartz PCI, JMP
- Automated TEM measurement workflows on IP-controlled images, enabling structured data generation for comparison and trend analysis
- Implemented custom, rule-based measurements to ensure consistent and repeatable results
- Designed the automation to generate annotated TEM images for traceability and outlier detection

Non-Sacrificial Layer Technology Development │ LG Display │ SEM, FIB, AFM, Spotfire, JMP
- Developed non-sacrificial layer processes to enable enhanced optical sensor functionality
- Reduced glass surface damage by optimizing CVD process temperature, mitigating scratch formation
- Optimized the laser lift-off (LLO) process, including laser source selection, beam profile, and process conditions

Particle Reduction for Yield Improvement │ LG Display │ FIB, SEM, Spotfire, JMP
- Improved product yield and reliability by identifying and mitigating particle contamination sources
- Conducted root cause analysis of particle generation using FIB/SEM characterization and Spotfire/JMP–based data analysis
- Implemented design and process parameter changes to reduce particle formation during manufacturing

iPhone 14/15 Pro Max Panel Validation │ LG Display │ FIB, SEM, AFM, TEM, Spotfire, Minitab
- Validated mass production readiness of iPhone display panels, ensuring compatibility and reliability across production stages
- Coordinated with cross-functional teams to align design, process, and reliability requirements during production ramp-up
- Performed first-article inspections, including reliability testing and detailed root-cause analysis, to ensure product quality and process stability

CERTIFICATIONS

- Semiconductor Fabrication 101 │ Purdue University   Oct 2024
- Six Sigma Green Belt │ LG Display   Oct 2022
- Semiconductor Process Training │ Korea Electronics Technology Institute   Aug 2020