Hyeongjoon Kim

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PROFESSIONAL SUMMARY

Process Engineer with combined experience in semiconductor and display process optimization, specializing in dry 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 and Reliability Improvement, Lithography, Thin-Film Deposition, Dry Etching, Plasma
- 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