

Dong Jun Kim



Department of Mechanical Engineering, KAIST

Telephone: +82-42-350-3278

Mobile: +82-10-2552-1853

E-mail: djkim1@kaist.ac.kr

Student ID: 20225034

Education

2022.03. - 2026.02. (predicted)	Ph.D. in Mechanical Engineering Department of Mechanical Engineering, KAIST, Daejeon, Korea Advisor: Prof. Taek-Soo Kim
2020.03. - 2022.02.	M.S. in Mechanical Engineering (<i>Summa cum laude</i> 4.3 / 4.3) Department of Mechanical Engineering, KAIST, Daejeon, Korea Advisor: Prof. Taek-Soo Kim -Thesis: Mechanical Reliability of Cu Interconnects - SiCN Capping Layer Interface by Surface Treatments
2016.03. - 2020.02.	B.S. in Mechanical Engineering (<i>Summa cum laude</i> 4.45 / 4.5) Department of Mechanical Engineering, Hanyang University, Seoul, Korea Advisor: Prof. Sung Wook Park
2010.03. - 2014.02.	Dongsan Christian High school

Scholarship & Awards

2025. 12.	Wooduk Foundation Scholarship.
2024. 08.	KAIST Humanity Scholarship Award (Achievement Category).
2023. 04.	IEEE ECTC Student Travel Award
2022. 11.	KAIST Department of Mechanical Engineering Master's Program Excellence Award
2022. 08	Kim Young-Han Global Leader Scholarship
2022. 04	마이크로전자 및 패키징 학회, 우수 논문 발표상
2021. 11.	ISMP 2021 Young Scientist Award
2022. 03. - Current	Korea Student Aid Foundation (KOSAF): Granted tuition (Ph.D. course)
2020. 03. - 2022.02	Korea Student Aid Foundation (KOSAF): Granted tuition (M.S. course)

Publication

International Journal (SCI)

<First author> [† : equal contribution]

- [1] **D. J. Kim†**, Y. S. Ham†, and T.-S. Kim*, "Adhesion Measurements and Improvement Strategies for Thin Film Structures: A Comprehensive Review", Under Review.
- [2] S. W. Lee†, **D. J. Kim†**, and T.-S. Kim*, "Effect of W nucleation process on the adhesion of W/TiN/SiO₂ structures for BEOL interconnects", **Applied Surface Science**, Under Review.
- [3] **D. J. Kim†**, S. W. Lee†, H. Lee and T.-S. Kim*, "Effect of Nucleation-Stage Reducing Agents on Residual Stress in CVD Tungsten Thin Films", **IEEE Transactions on Electron Devices**, Accepted.
- [4] **D. J. Kim**, S. W. Lee, W. Choi, H. J. Chang, I. Lee, S. Park, J. Lee, J. J. Kim, S. Kang*, and T.-S. Kim*, "[Identifying the weakest interface in BEOL structures](#)", **Applied Surface Science**, 163228, 2025.
- [5] **D. J. Kim†**, S. Kang+, S. W. Lee, S. Sung, I. Lee, S. Park, J. Lee, J. J. Kim, and T.-S. Kim*, "Role of loading mode on crack propagation behavior and adhesion at Cu-SiCN interface", **Applied Surface Science**, 688, 162461, 2025.
- [6] **D. J. Kim†**, S. Kang+, S. W. Lee, I. Lee, S. Park, J. Lee, J. J. Kim, and T.-S. Kim*, "Effects of Surface Treatments for the Adhesion Improvement between Cu and SiCN in BEOL Interconnect", **Surfaces and Interfaces**, 51, 104734, 2024.
- [7] HJ. Kim+, **D. J. Kim†**, J. P. Baek, W. J. Kim, S. Kim, and T.-S. Kim*, "Intrinsic Thermo-Mechanical Properties of Freestanding TEOS-SiO₂ Thin Films Depending on Thickness", **ACS Applied Electronic Materials**, 6, 5293-5300, 2024.
- [8] C. Lim†, S. Park†, **D. J. Kim†**, J.-W. Lee, J. Su. Park, S. Seo, D. Kim, F. S. Kim*, T.-S. Kim*, and B. J. Kim *, "Design of Mechanically-Robust Naphthalenediimide-based Polymer Additives for High-Performance, Intrinsically-Stretchable Polymer Solar Cells", **Journal of Materials Chemistry A**, 11(37), 20031-20042, 2023.
- [9] J. Kim†, G.-U. Kim†, **D. J. Kim†**, S. Lee, D. Jeong, S. Seo, S.-J. Ko*, S. C. Yoon*, T.-S. Kim*, and B. J. Kim*, "Development of rigidity-controlled terpolymer donors for high-performance and mechanically robust organic solar cells", **Journal of Materials Chemistry A**, 2023, 11, 4808.
- [10] J.-W. Lee†, G.-U. Kim†, **D. J. Kim†**, Y. Jeon, S. Li, T.-S. Kim*, J.-Y. Lee*, B. J. Kim* " Intrinsically-Stretchable Organic Solar Cells Achieved by High-Molecular-Weight, Electro-Active Polymer Acceptor Additives", **Advanced Energy Materials**, 2200887, 2022.
- [11] **D. J. Kim†**, S. Kang, S. W. Lee, I. Lee, S. Park, J. Lee, J. J. Kim, and T.-S. Kim*, "[Optimization of Cu interconnects-SiCN interfacial adhesion by surface treatments](#)", IEEE Electronic Components and Technology Conference, 367-373, 2023. (2023 Student Travel Grant Award)

<Co-author>

- [1] J.-W. Lee†, Ki. Baet†, **D. J. Kim**, S. Lee, S. Lee, J.-Y. Lee, T.-S. Kim, and B. J. Kim* "[Dual-Percolative Planar-Heterojunction Photoactive System for High-Performance Stretchable Organic Photovoltaics Enhancing Power Output Under Strain](#)", **Advanced Functional Materials**, 2025.
- [2] E. C. Chae, Y.-H. Seo, B. J. Kang, J. H. Oh, Y. Jung, J. Jang, T. Kim, Y.-R. Jo, **D. J. Kim**, T.-S. Kim, S. H. Im, S. J. Sung, S. S. Shin*, S. Hong*, J. J. Nam* "PTAA-Infiltrated Thin-Walled Carbon Nanotube Electrode with Hidden Encapsulation for Perovskite Solar Cells", **EcoMat**, 2024. (Impact factor: 10.7)
- [3] E.-Y. Shin, J. Park, **D. J. Kim**, S. H. Park, K. Kim, E. Go, K. Kim, H. Jin, J. S. Kim, J. H. Noh, S.-W. Baek, B. Chae, T.-S. Kim, E. Lee, S. Chung, Y. H. Jang and H. J. Son* "Highly mechanically stable and intrinsically stretchable large-area organic photovoltaics using nanoporous bulk-heterojunction", **Chemical Engineering Journal**, 499, 156116, 2024. (Impact factor: 13.3)
- [4] S. Kang, J. Chang, **D. J. Kim**, T.-S. Kim, K. C. Choi, J. H. Lee, and S. Kim* "Graphene-enabled laser-off for ultrathin displays", **Nature Communications**, 15, 8288, 2024. (Impact factor: 14.7)
- [5] C. Lim†, J.-W. Lee†, **D. J. Kim**, D. Han, T. N.-L. Phan, S. Lee, T.-S. Kim, and B. J. Kim* "Tetramerized Small-Molecule Acceptor for Organic Solar Cells with Enhanced Efficiency, Stability and Mechanical Robustness: Impact of Chain Length and Dispersity Effects", **Advanced Functional Materials**, 2409764, 2024. (Impact factor: 18.5)
- [6] T.-I. Lee†, J. H. Kim†, **D. J. Kim**, and T.-S. Kim*, "Evaluating Free Thermal Expansion and Glass Transition of Ultrathin Polymer Films on Heated Liquid", **ACS Applied Materials & Interfaces**, 16(23), 30336-30343, 2024. (Impact factor: 8.3)
- [7] J.-W. Lee†, C. Sun†, S. Lee, **D. J. Kim**, E. S. Oh, T. N.-L. Phan, T. H.-Q. Nguyen, S. Seo, Z. Tan, M. J. Lee, J.-Y. Lee, X. Bao, T.-S. Kim, C. Lee*, Y.-H. Kim*, and B. J. Kim*, "High-Performance Intrinsically Stretchable Organic Solar Cells Based on Flexible Spacer Incorporated Dimerized Small-Molecule Acceptors", **Nano Energy**, 109541, 2024. (Impact factor: 16.8)
- [8] J.-W. Lee†, C. Sun†, J. Lee, **D. J. Kim**, W. J. Kang, S. Lee, D. Kim, J. Park, T. N.-L. Phan, Z. Tan, F. S. Kim, J.-Y. Lee, X. Bao, T.-S. Kim, Y.-H. Kim* and B. J. Kim*, "Design of Star-Shaped Trimer Acceptors for High-Performance, Photostable, and Mechanically-Robust Organic Solar Cells", **Advanced Energy Materials**, 14(8), 2303872, 2024. (Impact factor: 24.4)
- [9] G.-U. Kim†, C. Choi†, D. Jeong†, **D. J. Kim**, T. N.-L. Phan, S. Song, J. Park, T.-S. Kim, Y.-H. Kim*, and B. J. Kim *, "Highly Efficient and Robust Ternary All-Polymer Solar Cells Achieved by Electro-Active Polymer Compatibilizers", **Advanced Energy Materials**, 13(39), 2302125, 2023. (Impact factor: 24.4)
- [10] H. Jin, K. Kim, S. Park, J. Rhee, H. Ahn, **D. J. Kim**, K. Kim, J. H. Noh, T.-S. Kim, E.-Y. Shin, and H. J. Son*, "Chemically Recyclable Conjugated Polymer and One-Shot Preparation of Thermally Stable and Efficient Bulk-Heterojunction from Recycled Monomer", **Advanced Functional Materials**, 33(47), 2304930, 2023. (Impact factor: 18.5)

- [11] H.-Y. Jung, E. S. Oh, **D. J. Kim**, H. Shim, W. Lee, S.-G. Yoon, J. Lim, J. S. Yun, T.-S. Kim, and T.-Y. Yang*, "Adjusted Bulk and Interfacial Properties in Highly Stable Semitransparent Perovskite Solar Cells Fabricated by Thermocompression Bonding between Perovskite Layers", *ACS Applied Materials & Interfaces*, 15(26), 31344-31353, 2023.
(Impact factor: 8.3)
- [12] S. Seo†, J.-W. Lee†, **D. J. Kim**, T. N.-L. Phan, J. Park, T.-S. Kim, and B. J. Kim*, "Poly(dimethylsiloxane)-block-PM6 Polymer Donors for High-Performance and Mechanically-Robust Polymer Solar Cells", *Advanced Materials*, 35(24), 2300230, 2023.
(Impact factor: 27.4)
- [13] B. Oh†, Y.-S. Lim†, K. W. Ko, H. Seo, **D. J. Kim**, D. Kong, J. M. You, H. Kim, T.-S. Kim, S. Park, D.-S. Kwon, J. C. Na, W. K. Han, S.-M. Park*, and S. Park*, "Ultra-soft and highly stretchable tissue-adhesive hydrogel based multifunctional implantable sensor for monitoring of overactive bladder", *Biosensors and Bioelectronics*, 115060, 2023.
(Impact factor: 10.7)
- [14] S. J. Sung, J. Im, G. Kim, C. S. Moon, J. J. Yoo, S. S. Shin, N. J. Jeon, B. S. Ma, **D. J. Kim**, T.-S. Kim, J. Seo*, "Molecular Engineering for Function-Tailored Interface Modifier in High-Performance Perovskite Solar Cells", *Advanced Energy Materials*, 12(27), 2200758, 2022.
(Impact factor: 24.4)
- [15] Q. Chen†, Y. H. Han†, L. R. Franco, C. F. N. Marchiori, Z. Genene, C. M. Araujo, J.-W. Lee, T. N.-L. Phan, J. Wu, D. Yu, **D. J. Kim**, T.-S. Kim, L. Hou*, B. J. Kim*, E. Wang* " Effects of Flexible Conjugation-Break Spacers of Non-Conjugated Polymer Acceptors on Photovoltaic and Mechanical Properties of All-Polymer Solar Cells ", *Nanomicro Letter*, 14, 164, 2022.
(Impact factor:)
- [16] J.-W. Lee†, C. Sun†, **D. J. Kim**, M. Y. Ha, D. Han, J. S. Park, C. Wang, W. B. Lee*, S.-K. Kwon*, T.-S. Kim*, Y.-H. Kim* and B. J. Kim*, "Donor-Acceptor Alternating Copolymer Compatibilizers for Thermally Stable, Mechanically Robust, and High-Performance Organic Solar Cells", *ACS Nano*, 15(12), 19970-19980, 2021.
(Impact factor: 15.8)
- [17] J.-W. Lee†, D. Jeong†, **D. J. Kim**, T. N.-L. Phan, J. S. Park, T.-S. Kim and B. J. Kim*, "Flexible-Spacer Incorporated Polymer Donors Enable Superior Blend Miscibility for High-Performance and Mechanically-Robust Polymer Solar Cells", *Energy & Environmental Science*, 14, 4067-4076, 2021.
(Impact factor: 32.4)
- [18] S. Song, E. Y. Park, B. S. Ma, **D. J. Kim**, H. H. Park, Y. Y. Kim, S. S. Shin, N. J. Jeon, T.-S. Kim and J. Seo*, "Selective Defect Passivation and Topographical Control of 4-Dimethylaminopyridine at Grain Boundary for Efficient and Stable Planar Perovskite Solar Cells", *Advanced Energy Materials*, 11, 2003382, 2021.
(Impact factor: 24.4)
- [19] J.-W. Lee, N. Choi, **D. J. Kim**, T. N.-L. Phan, H. Kang, T.-S. Kim and B. J. Kim*, "Side Chain Engineered Naphthalene Diimide-Based Terpolymer for Efficient and Mechanically Robust All-Polymer Solar Cells", *Chemistry of Materials*, 33(3), 1070-1081, 2021.
(Impact factor: 7.2)

International Conference Presentation

- [1] J. Nam, D.-M. Kim, **D. J. Kim**, T.-S. Kim and B. J. Lee, "Tuning substrate permittivity for enhanced plasmon thermal conductivity", The 11th JEMS-KSME Thermal and Fluids Engineering Conference (J-K TFEC11), Okinawa, Japan, Oct. 22-25, 2025.
- [2] **D. J. Kim**, S. W. Lee, W. Choi, H. J. Chang, S. Kang and T.-S. Kim, "Comprehensive Interface Adhesion Characterization for Advanced Semiconductor Packaging", International Microsystems, Packaging, Assembly and Circuits Technology Conference, TaiNEX, Taipei, Taiwan, Oct. 21-24, 2025. (Oral)
- [3] **D. J. Kim**, S. W. Lee, W. Choi, H. J. Chang, S. Kang and T.-S. Kim, "Interfacial adhesion mapping in BEOL structures", The 3rd Global conference of Innovation Materials & MRS-K Spring Meeting, Jeju, Korea, June 15-19, 2025. (Poster)
- [4] **D. J. Kim**, H. J. Kim and T.-S. Kim, "Study on the Intrinsic Thermo-mechanical Properties of TEOS-SiO₂ Thin Films through Etching of Naturally Formed Copper Oxide", The 22nd International Symposium on Microelectronics and Packaging joined with the 18th International Conference Reliability and Stress-Related Phenomena in Nanoelectronics (ISMP-IRSP 2024), Busan, Korea, Nov. 5-8, 2024. (Oral)
- [5] **D. J. Kim**, Y. H. Kim, and T.-S. Kim, "Fabrication of Robust Freestanding Gold Membrane by Heat Treatment", **Advanced Epitaxy for Freestanding Membranes and 2D Materials (AEFM) Conference 2023**, Seoul, Korea, Jul. 10-12, 2023. (Poster)
- [6] H. J. Kim, **D. J. Kim**, and T.-S. Kim, "Mechanical Properties of TEOS Thin Film", **ICEM20 - 20th International Conference on Experimental Mechanics**, Porto, Portugal, July 2-7, 2023. (Oral)
- [7] **D. J. Kim**, S. W. Lee, S. Kang, I. Lee, S. Park, J. S. Lee, J. Lee, J. J. Kim, T.-S. Kim, "Optimization of Cu Interconnects - SiCN Interfacial Adhesion by Surface Treatments", **2023 IEEE 73rd Electronic Components and Technology Conference**, Orlando, USA, May 30 - June 2, 2023. (Oral) (2023 ECTC Student Travel Award Winner)
- [8] E. S. Oh, **D. J. Kim**, T.-I. Lee, D. Lee, H. Park, J.-W. Lee, B. J. Kim and T.-S. Kim, "Thermo-mechanical behavior of poly(3-hexylthiophene-2,5-diyl) thin films for flexible and stretchable electronics", **The 20th International Symposium on Microelectronics and Packaging (ISMP)**, Busan, Korea, Nov. 9-11, 2022. (Oral)
- [9] S. W. Lee, **D. J. Kim**, J. Jeon, W.J. Yun, T.-S. Kim, and T.-S. Kim, "Investigation on the Mechanical Reliability of TiN/SiO₂ for W Nucleation Processes", **The 19th International Symposium on Microelectronics and Packaging (ISMP)**, Busan, Korea, Nov. 3-5, 2021. (Oral)
- [10] **D. J. Kim**, S. Kang, S. W. Lee, I. Lee, S. Park, J. S. Lee, J. Lee, J. J. Kim, and T.-S. Kim, "Optimization of Cu Interconnects-SiCN Interfacial Adhesion by Surface Treatments", **The 19th International Symposium on Microelectronics and Packaging (ISMP)**, Busan, Korea, Nov. 3-5, 2021. (Oral) (Young Scientist Award)

Domestic Conference Presentation

- [1] 성시혁, 김동준, 성동철, 김택수, 홍영준, 홍석륜, “낮은 일함수 차이 금속 증착을 통한 Graphene/SiO₂의 계면접합력 조정”, **대한기계학회 충청지회 2024년 춘계학술대회**, 대전, 2024/06/20. (Poster)
- [2] 오은성, 김동준, 이태익, 이다혜, 박현정, 이진우, 김범준, 김택수, “Thermo-mechanical Properties of Conjugated Polymer Thin Films for Flexible and Stretchable Devices”, **한국고분자학회 2022년도 추계 정기학술대회**, 대구, 2022/10/05-07. (Oral) 최우수 논문 발표상
- [3] 김동준, 강수민, 이인화, 박승주, 이지현, 김중정, 김택수, “표면처리와 하중 모드에 따른 Cu 도선과 SiCN 캡핑층 간의 접합 신뢰성”, **한국마이크로전자 및 패키징 학회 2022년도 춘계 정기학술대회**, 수원, 2022/04/06-07. (Oral) (우수 논문 발표상)
- [4] 김동준, 강수민, 이선우, 이인화, 박승주, 이지현, 김중정, 김택수, “표면 처리를 통한 Cu 도선과 SiCN 캡핑층 간의 접합 신뢰성 최적화”, **대한기계학회 신뢰성부문 2022년도 춘계학술대회**, 제주도, 2022/03/23-25. (Oral)

Patents

- [1] T.-S. Kim, D. J. Kim, and Y. Kim, Method for Manufacturing a Freestanding Membrane and Method for Forming an Electroplating Layer Using a Freestanding Membrane, Domestic patent, 10-2025-0016907.
- [2] T.-S. Kim, D. J. Kim, Method for Forming a Thin Film using a Free Standing Membrane, Domestic patent, 10-2025-0052407.
- [3] T.-S. Kim, D. J. Kim, S. Sung, Method for Manufacturing a Free Standing Pattern Structure, Domestic patent, 10-2025-0052466.
- [4] T.-S. Kim, D. J. Kim, S. Sung, Method for Transferring a Thin Film using a Free Standing Membrane, Domestic patent, 10-2025-0052414.
- [5] T.-S. Kim, D. J. Kim, Method for Measuring Mechanical Property of Thin Film, Domestic patent, 10-2025-0065115, 2025.
- [6] T.-S. Kim, D. J. Kim, Direct Delamination of Silicon Oxide Films from Copper Substrates Using Hydrochloric Acid for Freestanding Thin Film Fabrication and Tensile Testing Applications, Domestic patent, 10-2025-0103692, 2025.