

Hyoung Jun Lim

Assistant Professor

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EDUCATION

Seoul National University , Republic of Korea	Mar. 2017 - Feb. 2023
Ph.D., Department of Mechanical and Aerospace Engineering	
Korea Aerospace University , Republic of Korea	Mar. 2011 - Feb. 2017
B.S., Department of Mechanical and Aerospace Engineering	

PROFESSIONAL APPOINTMENTS

Gyeongsang National University , Republic of Korea	Jan. 2024 - present
Assistant Professor, School of Aerospace Engineering	
Imperial College London , United Kingdom	May 2023 - Dec. 2023
Research Associate., Department of Mechanical Engineering	
Seoul National University , Republic of Korea	Mar. 2023 - Apr. 2023
Postdoctoral Fellow, Institute of Construction and Environmental Engineering	

RESEARCH INTERESTS

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- Electro-chemo-mechanical modeling using finite element method
 - Continuum-based multiscale and multiphysics mechanics and simulations
 - Development of material constitutive models (crystal plasticity, composite, soft materials)
 - CT-image based material characterization and structural reconstruction
 - Stochastic quantification and durability assessment.
 - Deep learning modeling: CNN, UNET, GAN

HONORS AND AWARDS

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1. Outstanding Doctoral Dissertation Award, Seoul National University, 2023
 2. Best Student Award, BK21 at Seoul National University, 2022
 3. Best Paper Award, Computational Structural Engineering Institute of Korea (COSEIK), 2023
 4. Best Paper Award, The Korean Society for Composite Materials (KSCM), 2023
 5. Best Paper Award, The Korean Society for Aeronautical & Space Sciences (KASA), 2017

PROFESSIONAL SERVICE

Journal Reviewer

1. Acta Mechanica
2. Additive Manufacturing
3. Advances in Engineering Software
4. Advanced Theory and Simulations
5. Applied Composite Materials

6. Computers and Structures
7. Composite Materials Engineering
8. Composite Structures
9. Composites Communications
10. Composites Part A: Applied Science and Manufacturing
11. Composites Part B: Engineering
12. Composites Science and Technology
13. Computer Modeling in Engineering & Sciences
14. Engineering Applications of Artificial Intelligence
15. European Journal of Pharmaceutical Sciences
16. Functional Composites and Structures
17. Image and Vision Computing
18. Results in Engineering
19. International Journal of Aeronautical & Space Sciences
20. International Journal of Fatigue
21. International Journal of Mechanical Sciences
22. International Journal of Hydrogen Energy
23. Journal of Building Engineering
24. Journal of Mechanical Science and Technology
25. Journal of Physics and Chemistry of Solids
26. Materials and Design
27. Materials Today Communications
28. Multiscale Science and Engineering
29. Steel and Composite Structures
30. Thin-Walled Structures

Memberships in Professional Society

1. Academic Board, The Korean Society of Composite Materials (2024-present)

PUBLICATIONS

Dr. Lim and his team members are shown in **bold**.

Corresponding authors are underlined.

Equally contributed co-first authors are marked as *.

Google Scholar: <https://scholar.google.com/citations?user=I2ukYoMAAAAJ&hl=en&oi=ao>

International Journals

1. Lee, D., Ji, H., Yang, S. B., Kim, J. H., Kwak, B., **Lim, H. J.**, & **Kwon, D. J.** (2026). Enhanced evaluation of interfacial properties in fiber reinforced plastic via a modified tow fragmentation method. *Composites Part B: Engineering*, 113692.
2. Ko, M., Jayasubramanian, S., Kim, J., Kim, S., **Raj, K.**, **Lim, H. J.**, & **Sung, J.** (2026). Modulating Conductivity and Porosity of Interlayer for Long-Cycling All-Solid-State Lithium Metal Batteries. *Advanced Materials*, 38(16), e15640.
3. Arashpour, H., **Jafari Nedoushan, R.**, Akbarzadeh, S., Fashandi, H., Allafchian, A., & **Lim, H. J.** (2026). Epoxy/Carbon Fabric Composite Containing Core-Shell Polystyrene Electrospun Fibers: Integrated Self-Lubrication for Enhanced Wear Resistance and Mechanical Performance. *Polymer Composites*, 47(11), 9818-9827.
4. **Latifi Rostami, S. A.**, & **Lim, H. J.** (2026). Enhancing Structural Efficiency with Robust Evolutionary Topology Optimization (RETO) for Sustainable Engineering. *Results in Engineering*, 109325.
5. **Latifi Rostami, S. A.**, Kolahdooz, A., & **Lim, H. J.** (2026). Enhancing Structural Efficiency with Robust Evolutionary Topology Optimization (RETO) for Sustainable Engineering. *Engineering Optimization*, 1-22.
6. Vandishi, A. M., **Loghmani, A.**, **Nedoushan, R. J.**, & **Lim, H. J.** (2026). The effects of core negative stiffness on sound transmission loss of sandwich panels. *Composites Part A: Applied Science and Manufacturing*, 109396.
7. Yang, S., Kim, S., Kim, Y., **Lim, H. J.**, **Ahn, J.**, & **Kwon, D.** (2025). Iterative NN-based strategy with LIC technique

- for efficient optimization of the stacking sequence of a CFRP double roller. *Composite Structures*, 119684.
8. **Kashfi, M.**, Nourbakhsh, S. H., Amiripour A., & **Lim, H. J.** (2025) Constrained Functionally Graded Gyroid Structure for Tunable Energy Absorption. *Materials & Design*, Accepted.
9. **Latifi Rostami, S. A.**, Kolahdooz, A., & **Lim, H. J.** (2025). Buckling and Structural Stability of Conical Lattice Composite Shells with Openings: A Finite Element Approach. *International Journal of Structural Stability and Dynamics*, 2650359.
10. **Latifi Rostami, S. A.**, Kolahdooz, A., & **Lim, H. J.** (2025). Structural stability and design optimization of anisogrid conical lattice composite shells. *Structures*, 79, 109504.
11. **Latifi Rostami, S. A.**, Chung, H. & **Lim, H. J.** (2025). Efficient reliability-based topology optimization for enhanced resilience of piezoelectric actuators under material uncertainties. *Mechanics Based Design of Structures and Machines*, 1-30.
12. **Latifi Rostami, S. A.**, Kolahdooz, A., **Lim, H. J.**, & **Chung, H.** (2025). Robust topology optimization of piezoelectric actuators under uncertainties in material properties. *Smart Materials and Structures*, 34, 5.
13. Choi, H., **Lim, H. J.**, Ha, D., Kim J. H., & **Yun, G. J.** (2025). Multiscale stochastic fatigue analysis of CFRP laminate composites with Bayesian calibration-based characterization method. *Composite Structures*, 363, 119139.
14. Kim, J. H., Kim, H. J., Lee, D., Yang, S. B., Yu, S., Kim, H. G., Seo, B., Nam, S. Y., **Lim, H. J.**, **Lim, C.** & **Kwon, D. J.** (2025). Improvement adhesion durability of epoxy adhesive for steel/carbon fiber-reinforced polymer adhesive joint using imidazole-treated halloysite nanotube. *Advanced Composites and Hybrid Materials*, 8(1), 135.
15. Lee, K. H.*, **Lim, H. J.***, & **Yun, G. J.** (2024). A data-driven framework for designing microstructure of multifunctional composites with deep-learned diffusion-based generative models. *Engineering Applications of Artificial Intelligence*, 129, 107590.
16. **Lim, H. J.**, Kim, G., & **Yun, G. J.** (2023). Durability and performance analysis of polymer electrolyte membranes for hydrogen fuel cells by a coupled chemo-mechanical constitutive model and experimental validation. *ACS Applied Materials & Interfaces*, 15(20), 24257-24270.
17. Choi, H., **Lim, H. J.**, & **Yun, G. J.** (2023). An integrated unified elasto-viscoplastic fatigue and creep damage model with characterization method for structural analysis of nickel-based high-temperature structure. *International Journal of Damage Mechanics*, 32(1), 73-102.
18. You, H., **Lim, H. J.**, & **Yun, G. J.** (2022). A micromechanics-based time-domain viscoelastic constitutive model for particulate composites: Theory and experimental validation. *Advances in Aircraft and Spacecraft Science*, 9, 217-242.
19. Zhu, F. Y.*, **Lim, H. J.***, Choi, H., & **Yun, G. J.** (2022). A hierarchical micromechanics model for nonlinear behavior with damage of SMC composites with wavy fiber. *Composite Materials and Engineering*, 4(1), 1-21.
20. **Lim, H. J.**, Choi, H., & **Yun, G. J.** (2022). Multiscale failure and damage analysis of sheet molding compound (SMC) composites using Micro-CT image-based reconstruction model. *Composites Part B: Engineering*, 231, 109593.
21. **Lim, H. J.**, Choi, H., Yoon, S. J., Lim, S. W., Choi, C. H., & **Yun, G. J.** (2021). Micro-CT image-based reconstruction algorithm for multiscale modeling of Sheet Molding Compound (SMC) composites with experimental validation. *Composite Materials and Engineering*, 3(3), 221-239.
22. **Lim, H. J.**, Choi, H., Lee, M. J., & **Yun, G. J.** (2021). An efficient multi-scale model for needle-punched Cf/SiCm composite materials with experimental validation. *Composites Part B: Engineering*, 217, 108890.
23. Choi, H. I., Park, C., **Lim, H. J.**, & **Yun, G. J.** (2021). A nano-micro-macro multiscale modeling for carbon fiber-reinforced graphene/epoxy nanocomposites. *Multiscale Science and Engineering*, 3, 36-50.
24. **Yun, G. J.**, Zhu, F. Y., **Lim, H. J.**, & Choi, H. (2021). A damage plasticity constitutive model for wavy CNT nanocomposites by incremental Mori-Tanaka approach. *Composite Structures*, 258, 113178.
25. **Lim, H. J.**, Choi, H., Zhu, F. Y., Kerekes, T. W., & **Yun, G. J.** (2020). Multiscale damage plasticity modeling and inverse characterization for particulate composites. *Mechanics of Materials*, 149, 103564.
26. **Lim, H.**, Choi, H., Lee, M. J., & **Yun, G. J.** (2020). Elasto-plastic damage modeling and characterization of 3D needle-punched Cf/SiCm composite materials. *Ceramics International*, 46(10), 16918-16931.
27. Choi, H. I., Zhu, F. Y., **Lim, H.**, & **Yun, G. J.** (2019). Multiscale stochastic computational homogenization of the thermomechanical properties of woven Cf/SiCm composites. *Composites Part B: Engineering*, 177, 107375.
28. Jeong, S., Zhu, F., **Lim, H.**, Kim, Y., & **Yun, G. J.** (2019). 3D stochastic computational homogenization model for carbon fiber reinforced CNT/epoxy composites with spatially random properties. *Composite Structures*, 207, 858-

870.

29. Kerekes, T. W., **Lim, H.**, Joe, W. Y., & **Yun, G. J.** (2019). Characterization of process–deformation/damage property relationship of fused deposition modeling (FDM) 3D-printed specimens. *Additive Manufacturing*, 25, 532-544.
30. Zhu, F. Y., Jeong, S., **Lim, H. J.**, & **Yun, G. J.** (2018). Probabilistic multiscale modeling of 3D randomly oriented and aligned wavy CNT nanocomposites and RVE size determination. *Composite Structures*, 195, 265-275.

Domestic Journals

1. **Latifi Rostami, S. A.**, & **Lim, H. J.** (2025). Design of Anisotropic Piezoelectric Actuators Using Smooth Topology Optimization. *Composites Research*, 38(1), 42-49.
2. **Lim, H. J.**, Choi, H. I., Yoon, S. J., Lim, S. W., Choi, C. H., & **Yun, G. J.** (2021). Development of RVE Reconstruction Algorithm for SMC Multiscale Modeling. *Composites Research*, 34(1), 70-75.
3. **Lim, H. J.**, Choi, H. I., Lee, M. J., & **Yun, G. J.** (2021). Multiscale Finite Element Analysis of Needle-Punched C/SiC Composites through Subcell Modeling. *Journal of the Computational Structural Engineering Institute of Korea*, 34(1), 51-58.
4. Jang, K. S., **Lim, H. J.**, Hwang, J. H., Shin, J., & **Yun, G. J.** (2020). Development of Artificial Intelligence Joint Model for Hybrid Finite Element Analysis. *Journal of the Korean Society for Aeronautical & Space Sciences*, 48(10), 773-782.

INVITED/KEYNOTE PRESENTATIONS

University, Industry, Laboratory Seminars

1. “Advanced Air Mobility Development & the Role of Simulation”, *Gwangju Institute of Science and Technology*, 2026.04
2. “Advanced Air Mobility Development & the Role of Simulation”, *Ulsan National Institute of Science and Technology*, 2025.09
3. “Composite Materials Technology and Strategies for Developing Advanced Air Vehicle (AAV)”, *Korea Aerospace University*, 2025.05
4. “Establishment of composite material performance requirements for UAM applications and development of multi-scale prediction techniques”, *Hyundai Motors Company*, 2024.11
5. “Opportunities and Challenges of Composite Materials for UAM”, *Seoul National University*, Korea, 2024.06
6. “Opportunities and Challenges of Composite Materials for UAM”, *Korea Aerospace University*, Korea, 2024.04

Conferences and Workshop

1. “Multiscale & Multiphysics Modeling Development and Applications for Composite Materials”, *The Korea Society for Aeronautical & Space Sciences*, Korea, 2024

RESEARCH GRANTS/PROJECTS

1. Source: National Research Foundation of Korea, Brain Pool
Role: PI
Title: Optimal Design of Extreme-Environment Composites using a Deep-Learning Integrated Multiscale Computational Framework (2025-2027 / 170M KRW)
2. Source: National Research Foundation of Korea, Nano/Material Development (R&D)
Role: Co-PI
Title: Advanced Multi-dimensional Design of Durable Polymer Electrolyte Membranes and Continuous Manufacturing for High-pressure Dynamic Water Electrolysis (2026-2030 / 300M KRW)
3. Source: Korea Institute of Aviation Safety Technology (KIAST)
Role: Co-I
Title: Development and Localization of Firefighting Heavy-Lift Drones (2025-2027 / 50M KRW)
4. Source: Hyundai Motors Company
Role: Co-I

Title: Development of Autoclave Process utilizing Additive Manufacturing for Flexible Adaptation in Vehicle Development (2025-2026 / 80M KRW)

5. Source: National Research Foundation of Korea, Mid-career investigator funding
Role: PI

Title: Multiphysics/Multiscale Damage Prediction Simulator for 3D Printed Composites (2024-2026 / 130M KRW)

6. Source: National Research Foundation of Korea, Global Engineering Research Center
Role: Co-I

Title: Research Center for Industry Demand Driven Aircraft Core Technology with High Efficiency and Safety (2024-2027 / 300M KRW)

7. Source: National Research Foundation of Korea, Postdoctoral Research Fellowship
Role: PI

Title: Durability Assessment of Solid-State Batteries using Multiscale and Multiphysics Finite Element Modeling (2023 / 60M KRW)

8. Source: National Research Foundation of Korea, Ph.D. Student Research Fellowship
Role: PI

Title: Performance Evaluation of PEM Fuel Cells using Multiphysics Modeling (2021-2022 / 50M KRW)

COURSES TEACHING

1. Introduction to Aerospace Engineering (Undergraduate)
2. Aerospace Structural Mechanics (Undergraduate)
3. Mechanics of Materials (Undergraduate)
4. Statics (Undergraduate)
5. Numerical Analysis (Undergraduate)
6. Advanced Finite Element Analysis (Graduate)
7. Fracture Mechanics (Graduate)