

TAEWOO KIM

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Highly-motivated undergraduate student studying ChBE & MSE at KAIST, interested in next-gen batteries

EDUCATION

KAIST - Korea Advanced Institute of Science and Technology

Mar. 2019 - Jun. 2026 (Expected)

Undergraduate student

Daejeon, South Korea

- Primary Major — **Chemical and Biomolecular Engineering**
- Double Major — **Materials Science and Engineering**
- Overall GPA: **4.21/4.3** (99.1/100) ; ChBE GPA: 4.19/4.3, MSE GPA: 4.3/4.3
- Leave of Absence (Fall 2022 - Spring 2024) due to the mandatory military service

Georgia Institute of Technology

Aug. 2024 - May 2025

Exchange student in Chemical & Biomolecular Engineering

Atlanta, Georgia, U.S.A.

- Overall GPA: **4.0/4.0**
- Relevant Courseworks: Electrochem Energy Storage and Conversion (A), Electrochem Engr (Grad-level) (A)

RESEARCH EXPERIENCE

Energy Materials Lab — PI: Prof. Nam-Soon Choi

Jul. 2025 - Present

Undergraduate Research Assistant

Dept. of ChBE, KAIST

- **Project: Designing Electrolyte Suitable for Low-temperature Operation of Na-ion Batteries**
 - Studying the basic properties of electrolytes and its current research trends through various literature sources
 - Setting up key experimental conditions, such as screening several types of additives and optimizing the N/P ratio for the full cell testing

Liu Resarch Group — PI: Prof. Meilin Liu

Aug. 2024 - May 2025

Undergraduate Research Assistant

School of MSE, Georgia Tech

- **Project: Investigating Effect of Surface Treatment on Ni/Mn-based Co-free Layered Cathode for Li-ion Batteries**
 - Applied a lithium-molybdenum-phosphate (LMP) surface treatment on a cobalt-free cathode using a simple planetary mixing method followed by heat treatment
 - Trained overall steps of Li-ion coin half cell fabrication
 - Conducted various electrochemical tests and analyzed the data to assess the performance of the fabricated cells
 - Analyzed the data acquired from the microscopic characterizations to understand the coating chemistry
 - Demonstrated significant performance enhancements with LMP-coated cathode compared to the pristine cathode
 - Shared progress with the group members through bi-weekly meetings and technical presentations

Electrochemical Energy Devices Lab — PI: Prof. Hee-Tak Kim

Jan. 2021 - Dec. 2021

Undergraduate Research Assistant

Dept. of ChBE, KAIST

- **Project 1: Optimizing Composition of Cathode Materials in Flowless Zn-Br Aqueous Battery**
Individual Research (Jan. 2021 - Jun. 2021)
 - Found optimal composition of Super P & Activated carbon through galvanostatic cycling test
 - Employed various types of ordered mesoporous carbons to increase the surface area
 - Employed h-TiN catalyst to improve the capturing of bromine ions and enhance reactivity
- **Project 2: Identifying Key Operation Conditions of Electrolytic Zn-MnO₂ Battery**
URP - Undergraduate Research Participation Program (Jul. 2021 - Dec. 2021)
 - Found optimal operational current of the system through the rate capability test
 - Examined the underlying mechanism of cell degradation through the cyclic voltammetry and EIS
 - Enhanced the long-term energy efficiency by introducing an electrolyte reservoir to maintain the pH

PUBLICATION

1. Y. Ahn, X. Hu, Y. Ding, C. Kim, Y.-C. Wu, T. Kim, M. Liu*, **Synergistic Effects of Entropy Tuning in Niobium-Based Oxide Anode for Fast-Charging Lithium-Ion Batteries**. *Adv. Funct. Mater.* 2025, e09533. <https://doi.org/10.1002/adfm.202509533>

ACADEMIC PRESENTATION & AWARD

- Georgia Tech 19th UROP Spring Symposium** Apr. 2025
Poster presentation Undergraduate Research Opportunities Program, Georgia Tech
- Georgia Tech 12th Annual MRS Poster Competition** Apr. 2025
Poster presentation Materials Research Society (MRS) @ Georgia Tech
- Title: **Effect of Lithium-Molybdenum-Phosphate Surface Coatings on Ni/Mn-Based Co-Free Layered Cathode for Lithium-ion Batteries**
- KPF Student Academic Conference - Best Study Award** Feb. 2022
Third Prize out of 26 teams KPF Winter Workshop, KAIST
- Title: **Developing Electrolytic Zn-Mn Battery System and Identifying Key Operation Conditions**

HONOR & SCHOLARSHIP

- KAIST Presidential Fellowship (KPF)** Mar. 2021 - Present
Selected for having outstanding creativity and potential among undergraduates Global Leadership Center, KAIST
- National Presidential Science Scholarship** Mar. 2021 - Dec. 2024
Awarded to Korean students having outstanding potential in STEM field Korea Student Aid Foundation
- KOR-US High-Tech Industry Student Exchange Scholarship** Apr. 2024
Granted from KOR-US STEM Educational Exchange Initiative Korea Institute for Advancement of Technology
- Academic Excellence Scholarship**
Merit-based scholarship awarded to top 4 students in GPA Dept. of ChBE, KAIST
- Awarded semesters — Fall 2020 (2nd place), Spring 2021 (1st place), Fall 2021 (1st place)
- Dean's List**
Top 3% students recommended by the department head College of Engineering, KAIST
- Awarded semesters — Fall 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, Spring 2022

LANGUAGE PROFICIENCY

- TOEFL iBT**
- 103/120 (R: 27/30 ; L: 28/30 ; S: 24/30 ; W: 24/30) ... Test date: Aug. 2025

EXTRACURRICULAR ACTIVITY

- International House** Spring 2025
Living learning community shared between GT degree-seeking and exchange students Georgia Tech
- Engaged with diverse cultures and strengthened global communication skills
- Calculus II Tutor** Spring 2020 - Spring 2022
Tutoring program for freshmen School of Freshman, KAIST
- Delivered short lectures and provided tutoring for 5 consecutive semesters
- ChBE Student Council** Fall 2020 - Fall 2021
Member in the Division of Culture & Event Dept. of ChBE, KAIST
- Planned and executed initiatives to foster cohesion among classmates
- IT Volunteer** Nov. 2020
Conducted in online due to the COVID-19 pandemic World Friends Korea
- Developed and presented Photoshop lectures to Ugandan participants via Zoom