TAEWOO KIM

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Highly-motivated undergraduate student studying ChBE & MSE at KAIST, Interested in Battery R&D

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
Academic-year exchange student Atlanta, Georgia, U.S.A.

- Overall GPA: **4.0/4.0**

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 Ordered Mesoporous Carbons (OMCs) 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-MnO_2 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 energy efficiency of the system 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 Undergradute Research Opportunities Program, Georgia Tech

· Title: **Effect of Lithium-Molybdenum-Phosphate Surface Coatings on Ni/Mn-Based Co-Free Layered Cathode for Lithium-ion Batteries**

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 Academic Conference - Best Study Award Feb. 2022
Third Prize *among 26 teams* KPF Winter Workshop, KAIST

· Title: **Developing Electrolytic Zn-Mn Battery System and Identifying Key Operation Conditions** (Research from URP Program)

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 (2^{nd} place), Spring 2021 (1^{st} place), Fall 2021 (1^{st} 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

EXTRACURRICULAR ACTIVITY

International House Spring 2025
Living learning community shared between GT degree-seeking and exchange students Georgia Tech

· Delved into diverse culture & Trained communication skills with residents from all around the world

Calculus II Tutor
Tutoring program for freshmen School of Freshman, KAIST

· Worked as a freshmen Calculus II tutor for 5 consecutive semesters (Spring 2020 - Spring 2022)

ChBE Student Council Fall 2020 - Fall 2021
Member in the Division of Culture & Event Dept. of ChBE, KAIST

· Planned & executed initiatives to harmonize classmates

IT Volunteer Nov. 2020
Conducted in online due to the COVID-19 pandemic World Friends Korea

· Taught basic Photoshop skills to Ugandans via Zoom meeting