Minjae Kwen

Curriculum Vitae

Department of Chemistry, KAIST,
291, Daehak-ro, Yuseong-gu, Daejeon, Republic of Korea(34141)

Contact Info

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Research Interests

Computational Chemistry
- Nonadiabatic Dynamics Simulations
- First-principle Calculations in Catalytic Reactions

Synthesis and Application of Nanocatalysts

Educations

KAIST, Daejeon Mar. 2019 – Present
B.S. in Chemistry (Minor: Material Science)
- Current GPA: 4.18/4.3, Major GPA: 4.23/4.3
- Military Service, Alternative: May. 2022 – Feb. 2024

UC Berkeley, Berkeley, CA Jun. 2019 – Aug. 2019
Summer Sessions at UC Berkeley

Daegu Science High School, Daegu Mar. 2016 – Feb. 2019
High school for the gifted in science and mathematics

Publications

Journal Articles

1. *Splitting of Hydrogen Atoms into Proton–Electron Pairs at BaO–Ru Interfaces for Promoting Ammonia Synthesis under Mild Conditions*
   J. Am. Chem. Soc. 2023, 145, 20, 11364–11374.

   : As a co-first author, performed DFT calculation study of BaO-Ru interface in Ba-Ru/MgO catalyst.

Research Experiences

M-design Lab (KAIST) Mar. 2024 – Present
Individual Study, Undergraduate Research Program (URP)

Advisor: Hyungjun Kim
Topic: Nonadidabtic Simulation Study on the Facet-Dependent Carrier Dynamics of Cu_2O Photoelectrode Material

M-design Lab (KAIST) Dec. 2021 – Apr. 2023
Individual Study

Advisor: Hyungjun Kim
Topic: Splitting of Hydrogen Atoms into Proton–Electron Pairs at BaO–Ru Interfaces for Promoting Ammonia Synthesis under Mild Conditions - Computational Study

M-design Lab (KAIST) Dec. 2021 – May. 2024
Individual Study

Advisor: Hyungjun Kim
Topic: Screening Pathways for Nitrogen Monoxide Electroreduction on Transition Metal on TPP using Density-Functional Theory

Nanocatalyst Research Laboratory (KAIST) Jun. 2021 – Dec. 2021
Individual Study

Advisor: Hyunjoon Song

Studied the synthesis and characterization of various nanocatalysts including Au nanoparticles, Ag nanorods, Cu MOFs, etc. Applied the products to electrocatalysts and evaluated the catalytic efficiency.

Electrochemical Materials Design Laboratory (KAIST) Dec. 2020 – Feb. 2021
Individual Study

Advisor: Hye Ryung Byon
Topic: Electrochemical Potential Window of Molecular Crowded Electrolyte with Various Li Salt

Honors and Awards

Korean Presidential Science Scholarship, Chemistry 2019–Present
Korea Student Aid Foundation (KOSAF)

Designed to support top students with high creativity and potential to thrive in the field of science and technology, about twenty freshmen in the Chemistry field selected annually

KAIST Presidential Fellowship (KPF) 2019–Present
Global Leadership Center, KAIST

Designed to support a small number of top students in KAIST to grow as future global leaders in science and technology through various activities and learning programs, twenty-six freshmen selected in 2019

Dean's list, KAIST 2021
Best academic performance during the first six semesters, Spring 2019–Fall 2021

Hanseong Nobel Scholarship 2016–2019
Hanseong Sonjaehan Scholarship Foundation

Designed to support high school students, about 150 students selected in the scientific field

Certificate of Commendation, Social Service 2023
Gyeongin Regional Office of Military Manpower Administration

Praise for faithful social service and setting a good example for other social service agents

Others

KAIST-IIT Madras Joint Research Challenge 2020
Indian Institute of Technology Madras, Chennai, Tamil Nadu, India

Collaborated research with IITM students on the topics of sustainable environment

Alternative Military Service (Social Service) 2022–2024
Dangaram Kindergarten, Hanam-si, Gyeonggi-do, Korea

Social service in kindergarten, supporting the activities for disabled children
Awarded for faithful service - Certificate of Commendation