

Woojin Bae


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Education

Bachelor's degree in Chemical and Biological Engineering | **Seoul National University** **2020 - Present**

Exchange student in Chemical and Biomolecular Engineering | **North Carolina State University** **Spring 2025**

Major in Chemistry | **Daejeon Science High School for the Gifted** **2017 - 2020**

Research Experience

Self-Driving Fluidic Lab, NCSU **Jan. 2025 - May. 2025**

Undergraduate Researcher (Advisor: Prof. Milad Abolhasani) *Raleigh, US*

Multi-dimensional Materials Chemistry Lab, SNU **Mar. 2024 - Present**

Undergraduate Researcher (Advisor: Prof. Jungwon Park) *Seoul, Korea*

- Synthesized Ag cluster-based AIGS (silver indium gallium sulfide)-core.
- SEI Structures Dependent Li-Morphology Characterized by cryo-TEM; developed a protocol for quantitative analysis of SEI.
- **Team Leader** of "Undergraduate Independent Study 1" regarding LMBs SEI Cryo-TEM analyzing.

Center for Cell-Encapsulation Research, KAIST **Mar. 2018 - May. 2019**

R&E Researcher (Advisor: Prof. Insung Choi) *Daejeon, Korea*

- Created a porous titanium oxide shell to facilitate the in-vitro culturing of astrocytes.
- Confirmed the function of encapsulated astrocytes by analyzing the length of co-cultured neurons.

Conferences & Research Presentations

SEI Structures Dependent Li-Morphology Characterized by Cryo-TEM. **Bae, W.**; Jeong, S.; Ji, S.; Jeon, Y.; Park, J.
The 2024 Annual Fall Conference of Korean Society of Microscopy, Gyeongju, Korea (Nov 25, 2024). Poster Presentation.

Rethinking Life Choices Beyond the Child Penalty. **Bae, W.**; Miu Akutsu.; Park, J.; Xing Qing.
Tokyo Forum 2024: Shape the Future, Design for Tomorrow, Tokyo, Japan (Nov 22-23, 2024). Oral Presentation.

Regulation of astrocyte growth using porous titanium oxide shells. **Bae, W.**; Lee, K.; Lee, C.; Kim, T.; Choi, I.
Korean Chemical Society Future Chemist Research Presentation, Daegu, Korea (Oct 19, 2018). Poster Presentation.

Wettability Change of Self-Assembled Monolayers (SAMs) of Thiol on Gold. **Bae, W.**; Lee, K.; Lee, C.
The 51st Joint School Science Exhibition, Hong Kong, Hong Kong (Aug 22-27, 2018). Poster Presentation

Honors & Awards

Young Engineers Honor Society | National Academy of Engineering of Korea **Nov. 2024 - Present**

- Korean engineering honor society under National Academy of Engineering of Korea.

Korea-U.S. Student Exchange Program in the field of high-tech industry | Ministry of Trade, Industry and Energy **Nov. 2024**

- Awarded **\$9000 scholarship** as a STEM-specialized exchange student.

Excellence Poster Award | The 5th Undergraduate Student Advanced Experimental Research Program **Jan. 2024**

- Consideration on the relationship between microscopic structure and macroscopic shape according to the synthesis conditions of Hollow ZSM-5.

Team Section Winner | We Change SNU Contest **Jul. 2022**

- A spatial-restricted messenger allowing messages to be accessed only at SNUfestival locations designated by the sender.

The Education and Research Foundation Scholarship | College of Engineering, SNU **Spring 2021**

Merit-based Scholarship | Department of Chemical and Biological Engineering, SNU **Fall 2020**

2020 Future Chemistry Talent Award | The Korean Union of Chemical Science and Technology Societies **Feb. 2020**

- Awarded as one of the **top 6 science high school students** in Korea

Excellence Poster Award | 2019 Gifted School R&E Joint presentation **Jan. 2019**

- Regulation of astrocyte growth using porous titanium oxide shells.

Encouragement Prize | 2017 Science Gifted and Talented Creative Research Conference **Jan. 2018**

- Correlation between Z-potential and contact angle of quantum dots solution.

Leadership

Tokyo Forum Youth Session The University of Tokyo & Chey Institute for Advanced Studies, Japan	Aug. 2024 - Nov. 2024
<ul style="list-style-type: none">• Representative of Korean students, participated in the wrap-up session hosted by the President of the University of Tokyo.	
HKUST Entrepreneurship Bootcamp 2024 Hong Kong University of Science and Technology, Hong Kong	Jul. 2024
<ul style="list-style-type: none">• Participated in a mock-up competition as a team leader and won the third prize for a worldwide healthcare platform.	
Marketing team & manager SNUfestival, Student council-affiliated organization, SNU	Jun. 2021 - May. 2022
<ul style="list-style-type: none">• Promoted the festival through the online website and video during the COVID-19 pandemic.• Secured sponsorship from a shared scooter company during the first in-person festival after the COVID-19 pandemic.	
Vice president Chemical and Biological Engineering Interim Leadership, SNU	Dec. 2020 - Mar. 2021
<ul style="list-style-type: none">• Conducted freshman orientation, via Zoom during the COVID-19 pandemic.	

Teaching & Mentoring Experience

Korean Language Peer Mentor Language Education Institute, SNU	Fall 2024
Learning Assistant Faculty of Liberal Education, SNU	Fall 2024
<ul style="list-style-type: none">• Basic Computing: First Adventures in Computing, L0444.000400.	
TEM Seminar Multi-dimensional Materials Chemistry Lab, SNU	May. 2024
<ul style="list-style-type: none">• Amplitude and Phase Contrast.	
Student Mentor, SNU Mentoring Seoul National University Social Responsibility	Apr. 2023 - Present
<ul style="list-style-type: none">• Provided career guidance to the middle school student from underserved communities, selected as a superb mentor.	

Extracurricular Activities

SNU-UMN Culture Exchange Program The University of Minnesota, MN, US	Mar. 2024
2023 Winter Vacation Data Science Bootcamp: Computing Graduate School of Data Science, SNU	Feb. 2024
Encouragement Prize SNU in the World Program UCC Contest, Office of International Affairs, SNU	Nov. 2022
Serving military service Daegu, Korea	Aug.2022 - May.2024
<ul style="list-style-type: none">• 110th Squadron, operating the F-15K Slam Eagle. Selected as an exemplary soldier.	
SNU in EU program Brussels School of Governance, Belgium	Jul. 2022
<ul style="list-style-type: none">• Understanding European Unions, M2170.004600, delivered a presentation titled "The European External Action Service".	
Summer International Exchange program Kansas Academy of Mathematics and Science, KS, US	Jul. 2018
<ul style="list-style-type: none">• Synthesized ZnSe quantum dots and applying them on Gratzel cell.	

Skills & Languages

- **Instruments:** TEM, SEM, UV-Vis, OM, PL
- **Languages:** Korean (Native), English (C1, TOEFL 95)
- **Programming Languages:** Python, C, Html, CSS
- **Software:** Adobe Premiere Pro, Adobe illustrator, Fusion 360, Gatan DigitalMicrograph