



# Woojin Bae

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## Education

Bachelor's degree in Chemical and Biological Engineering   <b>Seoul National University</b>	<b>2020 - Present</b>
Exchange student in Chemical and Biomolecular Engineering   <b>North Carolina State University</b>	<b>Spring 2025</b>
Major in Chemistry   <b>Daejeon Science High School for the Gifted</b>	<b>2017 - 2020</b>

## 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.
- **Team Leader** of “Undergraduate Independent Study 1” regarding LMBs SEI Cryo-TEM analyzing.
- SEI Structures Dependent Li-Morphology Characterized by cryo-TEM; developed a protocol for quantitative analysis of SEI

**Center for Cell-Encapsulation Research, KAIST** **Mar. 2018 - May. 2019**  
Research & Education Student (Advisor: Prof. Insung Choi) *Daejeon, Korea*

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

## Conferences & Research Presentations

SEI Structures Dependent Li-Morphology Characterized by Cryo-TEM. **Bae, W.**; Jeong, S.; Ji, S.; 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**

**Korea-U.S. Student Exchange Program in the field of high-tech industry** | Ministry of Trade, Industry and Energy **Nov. 2024**  
• Awarded a **\$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 Selected** | Changing 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 **Mar. 2021 - Jun. 2021**

**Merit-based Scholarship** | Department of Chemical 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 Korea Foundation for the Advancement of Science & Creativity Conference **Jan. 2018**  
• Correlation between Z-potential and contact angle of quantum dots solution.

## Leadership

<b>Marketing team &amp; manager</b>   SNUfestival, Student council-affiliated organization, SNU	<b>Jun. 2021 - May. 2022</b>
<ul style="list-style-type: none"><li>• Promoted the festival through the <b>online website</b> and video during the COVID-19 pandemic.</li><li>• <b>Secured a sponsorship</b> the shared scooter company during the first in-person festival after the COVID-19 pandemic.</li></ul>	
<b>Vice president</b>   CBE Interim Leadership, SNU	<b>Dec. 2020 - Mar. 2021</b>
<ul style="list-style-type: none"><li>• <b>Conducted freshman orientation</b>, via Zoom during the COVID-19 pandemic.</li></ul>	

## Teaching & Mentoring Experience

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

## Extracurricular Activities

<b>Tokyo Forum Youth Session</b>   The University of Tokyo & Chey Institute for Advanced Studies, Japan	<b>Aug. 2024 - Nov. 2024</b>
<ul style="list-style-type: none"><li>• <b>Represented Korean students</b>, participated in the warp-up session hosted by the President of the University of Tokyo.</li></ul>	
<b>HKUST Entrepreneurship Bootcamp 2024</b>   Hong Kong University of Science and Technology, Hong Kong	<b>Jul. 2024</b>
<ul style="list-style-type: none"><li>• Participated in the mock start-up competition and won the <b>third prize</b> for the idea of worldwide healthcare platform.</li></ul>	
<b>SNU-UMN Culture Exchange Program</b>   The University of Minnesota, via Zoom	<b>Mar. 2024</b>
2023 Winter Vacation Data Science Bootcamp: <b>Computing</b>   Graduate School of Data Science, SNU	<b>Feb. 2024</b>
<b>Encouragement Prize</b>   SNU in the World Program UCC Contest, Office of International Affairs, SNU	<b>Nov. 2022</b>
<b>Serving military service</b>   Daegu, Korea	<b>Aug.2022 - May.2024</b>
<ul style="list-style-type: none"><li>• 110<sup>th</sup> Squadron, operating the F-15K Slam Eagle. Selected as an <b>exemplary soldier</b>.</li></ul>	
<b>SNU in EU program</b>   Brussels School of Governance, Belgium	<b>Jul. 2022</b>
<ul style="list-style-type: none"><li>• Understanding European Unions, M2170.004600, delivered a presentation titled "The European External Action Service".</li></ul>	
<b>Summer International Exchange program</b>   Kansas Academy of Mathematics and Science, US	<b>Jul. 2018</b>
<ul style="list-style-type: none"><li>• Synthesized ZnSe quantum dots and applying them on Gratzel cell.</li></ul>	

## Skills & Languages

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