



# 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

<b>Self-Driving Fluidic Lab, NCSU</b>	<b>Jan. 2025 - May. 2025</b>
Undergraduate Researcher (Advisor: Prof. Milad Abolhasani)	<i>Raleigh, US</i>

<b>Multi-dimensional Materials Chemistry Lab, SNU</b>	<b>Mar. 2024 - Present</b>
Undergraduate Researcher (Advisor: Prof. Jungwon Park)	<i>Seoul, Korea</i>

- 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

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

- 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 neurons co-cultured with encapsulated astrocytes.

## 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

<b>Young Engineers Honor Society</b>   National Academy of Engineering of Korea	<b>Nov. 2024 - Present</b>
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<b>Korea-U.S. Student Exchange Program in the field of high-tech industry</b>   Ministry of Trade, Industry and Energy	<b>Nov. 2024</b>
• Awarded <b>\$9000 scholarship</b> as a STEM-specialized exchange student.	

<b>Excellence Poster Award</b>   The 5th Undergraduate Student Advanced Experimental Research Program	<b>Jan. 2024</b>
• Consideration on the relationship between microscopic structure and macroscopic shape according to the synthesis conditions of Hollow ZSM-5.	

<b>Team Section Selected</b>   Changing SNU Contest	<b>Jul. 2022</b>
• A spatial-restricted messenger allowing messages to be accessed only at SNUfestival locations designated by the sender.	

<b>The Education and Research Foundation Scholarship</b>   College of Engineering, SNU	<b>Spring 2021</b>
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<b>Merit-based Scholarship</b>   Department of Chemical Biological Engineering, SNU	<b>Fall 2020</b>
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<b>2020 Future Chemistry Talent Award</b>   The Korean Union of Chemical Science and Technology Societies	<b>Feb. 2020</b>
• Awarded as one of the <b>top 6 science high school students</b> in Korea	

<b>Excellence Poster Award</b>   2019 Gifted School R&E Joint presentation	<b>Jan. 2019</b>
• Regulation of astrocyte growth using porous titanium oxide shells.	

<b>Encouragement Prize</b>   2017 Korea Foundation for the Advancement of Science & Creativity Conference	<b>Jan. 2018</b>
• 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 sponsorship</b> from a shared scooter company during the first in-person festival after the COVID-19 pandemic.</li></ul>	
<b>Vice president</b>   Chemical and Biological Engineering 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, SNU Mentoring</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, MN, US	<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, KS, 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)
- **Programming Languages:** Python, C, Html, CSS
- **Software:** Adobe Premiere Pro, Adobe illustrator, Fusion 360, Gatan DigitalMicrograph