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**	**Jan. 2025 – Apr. 2025**
Major in Chemistry	**Daejeon Science High School for the Gifted**	**2017 - 2020**

Research Experience

Undergraduate Researcher | Multi-dimensional Materials Chemistry Lab, SNU, Republic of Korea — **Mar. 2024 - Present**
- Synthesized Ag cluster-based AIGS(silver indium gallium sulfide)-core
- SEI Structures Dependent Li-Morphology Characterized by cryo-TEM
- **Team Leader** of **"Undergraduate Independent Study 1"** regarding LMBs SEI Cryo-TEM analyzing.

R&E Student | Center for Cell-Encapsulation Research, KAIST, Republic of Korea — **Mar. 2018 - May. 2019**
- 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, Republic of 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, Republic of 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** for Exchange student for a semester

Excellence Poster Award | The 5th Undergraduate Student Advanced Experimental Research Program — **Jan. 2024**
- Theme: 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**
- Theme: Spatial-restricted messenger. The receiver can open a message only at the point where the sender had designated it to do so. Consists of an experimental UI Design, including 100 different interfaces for the loading screen.

The Education and Research Foundation Scholarship | College of Engineering, SNU — **Mar. 2021 - Jun. 2021**

Merit-based Scholarship | Department of Chemical Biological Engineering, SNU — **Sep. 2020 - Dec. 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**
- Theme: Regulation of astrocyte growth using porous titanium oxide shells

Encouragement Prize | 2017 Korea Foundation for the Advancement of Science & Creativity Conference   **Jan. 2018**
- Theme: Correlation between Z-potential and contact angle of QDs solution

Leadership

Marketing team & manager | SNUfestival, SNU, Republic of Korea   **Jun. 2021 - May. 2022**
- Promoted the festival through **the online website** during COVID-19
- **Secured a sponsorship** agreement with the shared scooter company 'Swing'

Vice president | CBE Interim Leadership, SNU, Republic of Korea   **Dec. 2020 - Mar. 2021**
- **Conducted freshman orientation**, facilitating the integration of new students, via Zoom during COVID-19.

Teaching and Mentoring Experience

Korean Language Peer Mentor | Language Education Institute, SNU   **Fall 2024**

Teaching Assistant | Faculty of Liberal Education, SNU   **Fall 2024**
- Basic Computing: First Adventures in Computing, L0444.000400

TEM Seminar | Multi-dimensional Materials Chemistry Lab, SNU   **May. 2024**
- Amplitude and Phase Contrast

Student Mentor | Seoul National University Social Responsibility   **Apr. 2023 – Present**
- Selected as **a superb mentor**

Extracurricular Activities

Tokyo Forum Youth Session | The University of Tokyo & Chey Institute for Advanced Studies, Japan   **Aug. 2024 – Nov. 2024**
- Represented Korean students and participated in the warp-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**
- Participated in the mock start-up competition and won the **third prize** for the idea of worldwide healthcare platform

SNU-UMN Culture Exchange Program | via Zoom   **Mar. 2024 - Apr. 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, Republic of Korea   **Aug.2022 - May.2024**
- 110th Squadron, operating the F-15K Slam Eagle, selected as an **exemplary soldier**

SNU in EU program | Brussels School of Governance, Belgium   **Jul. 2022**
- Understanding European Unions (EU), M2170.004600, delivered a presentation titled "The European External Action Service"

Summer International Exchange program | Kansas Academy of Mathematics and Science, USA   **Jul. 2018**
- Synthesized ZnSe Quantum dots and applying them on Gratzel cell

Skills & Languages

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