

Seungju Lee

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ACADEMIC EDUCATION

Sungkyunkwan University (SKKU)	Suwon, Korea
MS-Ph.D Integrated course Chemical Engineering	Sep. 2024 - Present
Thesis advisor: Prof. Sooyeon Cho	

Sungkyunkwan University (SKKU)	Suwon, Korea
B.S. Chemical Engineering	Feb. 2018 – Aug. 2024
GPA: 4.10/4.50 Major GPA: 4.37/4.50	

AWARDS AND HONORS

May. 2026	Best Poster Presentation Award - Global Conference of Innovation Materials
Aug. 2025	Best Poster Presentation Award – The Asian Society for Colloid and Surface Science
Aug. 2025	Encouragement Prize – SKKU Research Matters Plus
Jun. 2025	Best ChEllengers Scholarship – SKKU ChemE
Oct. 2024	Kiturami National Engineering College Scholarship - Kiturami
Jul. 2024	Academic Excellence Scholarship – Sungkyunkwan University
Jul. 2024	Best Poster Award – ACS Nano Summit Symposium 2024

TEACHING EXPERIENCE

Teaching Assistant, SKKU	Suwon, Korea
ECH2024 (Industrial Biochemistry)	Fall 2024
GEDT017 (Creative Integrated Design)	Spring 2025
GEDW004 (Scientific and Technical Writing)	Fall 2025
ECH7010 (Fundamentals and Applications of Instrumental Analysis)	Spring 2026

Undergraduate Research Mentor, SKKU	Suwon, Korea
Mentored undergraduate researchers in the laboratory	Spring 2025
Mentored undergraduate researchers in the laboratory	Fall 2025
Mentored undergraduate researchers in the laboratory	Spring 2026

PATENTS

Domestic Patents (Republic of Korea)

3. 검출 구조체, 그의 설계 방법, 및 그의 제조방법, 조수연, 이승주, 류광희
/ 출원번호: 10-2025-0160439 / 출원일자: 30.10.2025
2. 단일벽 탄소나노튜브를 이용한 바이러스 식별 시스템 및 방법, 조수연, 전창욱, 이승주
/ 출원번호: 10-2025-0093545 / 출원일자: 11.07.2025
1. 범용 바이러스 검출 센서, 검출 방법, 검출 플랫폼, 검출 플랫폼 구축 방법, 및 검출 시스템, 조수연, 이율림, 조영욱, 윤민영, 이승주
/출원번호: 10-2024-0124312 / 출원일자: 11.09.2024

PUBLICATIONS

13. Jeongmin Cha†, Seungju Lee†, Soo-Yeon Cho* “Mutation-triggered Drug Release and Optical Reporting via Programmable DNA Corona on Single-Walled Carbon Nanotube” In Preparation
12. Seungju Lee, Soo-Yeon Cho* “Enviromentally Resilient yet Analyte-Responsive Peptide Nucleic Acid Corona Phases on Single-Walled Carbon Nanotube” In Preparation
11. Seungju Lee, Soo-Yeon Cho* “X-DNA Assembled Single-Walled Carbon Nanotube Sensor Gel for In-Line Real-Time Monitoring” In Preparation
10. Seungju Lee, Soo-Yeon Cho* “Thermal Modulation of DNA Corona enhancing the Signal-to-Noise Ratio in Single-Walled Carbon Nanotube based Sensors” In Preparation
9. Seungju Lee, Jongpil Park, Soo-Yeon Cho* “Programmable Peptide Coronas on Single-Walled Carbon Nanotubes for Target Specific nIR Optical Nanosensors” In preparation
8. Seungju Lee, Seyoung Shin, Minyeong Yoon, Jeongmin Cha, Soo-Yeon Cho* "Kinetically Tuned Single Walled Carbon Nanotube Corona for Selective Detection of Circulating Tumor DNA Point Mutations" *The Journal of Physical Chemistry B* **2026**, 130, 980–991
7. Seungju Lee, Jeongmin Cha, Seyoung Shin, Minyeong Yoon, Gabriel Sánchez-Velázquez, Sungyun Yang, Michael S. Strano, Soo-Yeon Cho* " Corona Dynamics of Nanoparticles and Their Functional Design Space in Molecular Sensing" *ACS Nano* **2025**, 19, 24653–24668.
6. Changyu Tian, Seungju Lee, Seongcheol Park, Youngwook Cho, Changi Baek, Soo-Yeon Cho* "Decoding Hidden Features in Near-Infrared Fluorescence Spectra of Single-Walled Carbon Nanotubes via Machine Learning for Multiplexed Virus Identification" *ACS Nano* **2025**, 19, 23992–24004.
5. Minyeong Yoon, Seyoung Shin, Seungju Lee, Soo-Yeon Cho* "Enzyme-Free Optical Detection of Uric Acid Using Corona Phase Molecular Recognition in Near-Infrared Fluorescent Single-Walled Carbon Nanotube " *Nanoscale* **2025**, 17, 10652-10662.

4. **Seungju Lee**†, Gwanghui Ryu†, Seyoung Shin, Woojin Kim, Minyeong Yoon, Yeji Kim, Seongjun Park, YongJoo Kim, Soo-Yeon Cho* "Clinically-Driven Rapidly Developed Nanoparticle Corona for Label-Free Cerebrospinal Fluid Leakage Detection" *ACS Nano* **2025**, 19, 950–962.
3. Minyeong Yoon, Seyoung Shin, **Seungju Lee**, Joohoon Kang, Xun Gong, Soo-Yeon Cho* "Scalable Photonic Nose Development Through Corona Phase Molecular Recognition" *ACS Sensors* **2024**, 9, 6311–6319.
2. Yullim Lee, Woojin Kim, Youngwook Cho, Minyeong Yoon, **Seungju Lee**, Jungwoo Lee, Sangyeon Oh, Yeongjun Song, Brain Lee, YongJoo Kim*, Soo-Yeon Cho* "Rational Design of 3D Polymer Corona Interfaces of Single-Walled Carbon Nanotubes for Receptor-Free Virus Recognition " *ACS Nano* **2024**, 18, 13214-13225.
1. Minyeong Yoon†, Yullim Lee†, **Seungju Lee**, Youngwook Cho, Damee Koh, Seyoung Shin, Changyu Tian, Youngho Song, Joohoon Kang, Soo-Yeon Cho* "nIR Fluorescent Single-Walled Carbon Nanotube Sensor for Broad-Spectrum Diagnostics" *Sensors & Diagnostics* **2024**, 3, 203-217.

RESEARCH PRESENTATIONS

International Conferences

8. (Poster) **Seungju Lee**, Jongpil Park, Sooyeon Cho, "Programmable Peptide Coronas on Single-Walled Carbon Nanotubes for Target Specific nIR Optical Nanosensors", NANO KOREA, Korea, 2026
7. (Poster) **Seungju Lee**, Jongpil Park, Sooyeon Cho, "Rapid Design of Target-Specific Peptide/Single-Walled Carbon Nanotube Optical Nanosensor via Biopanning-Guided Peptide Discovery", The 4th Global Conference of Innovation Materials (GCIM), Korea, 2026
6. (Poster) **Seungju Lee**, Gwanghui Ryu, Sooyeon Cho, "Label-Free Real-Time Detection of Cerebrospinal Fluid Leakage via Programmable Single-Walled Carbon Nanotube Corona Interfaces", Nature Forum: The Future of Sensing Technologies, Korea, 2026
5. (Oral) **Seungju Lee**, Gwanghui Ryu, Sooyeon Cho, "Programmable Molecular Recognition Interface of SWCNT Soft Corona for Cerebrospinal Fluid Leakage Detection", Assian Conference on Colloid and Interface Science 2025 (ACCIS 2025), Korea, 2025
4. (Poster) **Seungju Lee**, Gwanghui Ryu, Sooyeon Cho, "Surface-Engineering of SWCNT Soft Corona Interfaces for Selective Detection of Cerebrospinal Fluid Leakage", Assian Conference on Colloid and Interface Science 2025 (ACCIS 2025), Korea, 2025
3. (Oral) **Seungju Lee**, Gwanghui Ryu, Sooyeon Cho, "A Clinically-Driven Accelerated Corona Phase Sensor for Label-Free Cerebrospinal Fluid Leakage Detection", The 35th International Symposium on Chemical Engineering (ISChE 2024), Japan, 2024
2. (Poster) **Seungju Lee**, Sooyeon Cho, "Rapid Detection of Circulating Tumor DNA using

nIR Fluorescent Single-Walled Carbon Nanotube by Oligonucleotide Hybridization”, NANO KOREA, Korea, 2024

1. (Poster) **Seungju Lee**, Gwanghui Ryu, Sooyeon Cho, “Rapid Detection of Cerebrospinal Fluid Leakage through Nasal Mucus using a nIR Fluorescent Single-Walled Carbon Nanotube Sensor”, ACS Nano Summit, Korea, 2024

Domestic Conferences

6. (Poster) **Seungju Lee**, Sooyeon Cho, “Selective Circulating Tumor DNA Point Mutation Sensing via Kinetically Tuned Single-Walled Carbon Nanotube Corona”, The Korean BioChip Society (KBCS): Spring Meeting, April 2026

5. (Poster) **Seungju Lee**, Gwanghui Ryu, Sooyeon Cho, “Surface-Engineering of SWCNT Soft Corona Interfaces for Clinical Diagnosis of Cerebrospinal Fluid Leakage”, The Korean BioChip Society (KBCS): Fall Meeting, Nov 2025

4. (Poster) **Seungju Lee**, Gwanghui Ryu, Sooyeon Cho, “Rapidly Developed Single-Walled Carbon Nanotube Sensor for Label-Free Cerebrospinal Fluid Leakage Detection”, The Korean BioChip Society (KBCS): Spring Meeting, May 2025

3. (Oral) **Seungju Lee**, Gwanghui Ryu, Sooyeon Cho, “A Clinically-Driven Rapid Development of Label-Free Nanoparticle Corona for Cerebrospinal Fluid Leakage Detection”, The Korean Institute of Chemical Engineers: Fall Meeting, Oct 2024

2. (Poster) **Seungju Lee**, Sooyeon Cho, “Rapid Detection of Cerebrospinal Fluid Leakage through Nasal Fluid using nIR Fluorescent of Single-Walled Carbon Nanotube Sensor”, The Korean Sensor Society, April 2024

1. (Poster) **Seungju Lee**, Sooyeon Cho, “Rapid Detection of Circulating Tumor DNA using Oligonucleotide Hybridization of nIR Fluorescent Single-Walled Carbon Nanotube”, The Korean Institute of Chemical Engineers: Spring Meeting, April 2024