

ERICK CHICA-CARRILLO

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»»» EDUCATION

KOREA ADVANCED INSTITUTE OF SCIENCE & TECHNOLOGY - (KAIST)

Feb 2022 - Aug 2025

Master of Science (MS) in Electrical Engineering

📍 Daejeon, South Korea

- » **Research Area:** Bioelectronic Systems, Flexible Electronics, Organ-on-a-Chip, and Organoids
- » **Thesis:** Development of a Three Dimensional Multiwell Millifluidic Platform Integrated with Stretchable Microelectrode Arrays for Organoid Evaluation in Real Time
- » **Funding:** KAIST Scholarship for International Students

KOREA UNIVERSITY

Feb 2018 - Feb 2022

Bachelor of Engineering (BEng) in Electrical Engineering

📍 Seoul, South Korea

- » **Graduation Project:** Design of a Fault Detecting Device for Vibrating Machines
- » **Funding:** Global Korea Scholarship (GKS)

»»» RESEARCH EXPERIENCE

KAIST - SCHOOL OF ELECTRICAL ENGINEERING

Feb 2022 - Aug 2025

Graduate Researcher

📍 Daejeon, South Korea

- » Designed, simulated, fabricated, optimized, and characterized flexible polymer-based microfluidic chips, such as polydimethylsiloxane (PDMS) and SU-8 to study organoid-to-media interactions.
- » Fabricated, characterized, and analyzed data from microelectro mechanical systems (MEMS)-based electrophysiological devices, such as multi-electrode arrays (MEAs), ensuring reliable and long-term performance on electrogenic organoids and rough surfaces.
- » Researched, studied, fabricated, and experimented on novel and emerging flexible materials for bio electronic applications, such as wearable sensors, organ-on-a-chip, and soft robotics.

KOREA UNIVERSITY - DEPARTMENT OF ELECTRICAL ENGINEERING

Jan 2021 - Jul 2021

Undergraduate Intern

📍 Seoul, South Korea

- » Developed a monitoring system device to detect vibrating machine malfunctions based on waveforms recovered from accelerometers.
- » Simulated and tested different mixed-signal circuits to process acquired signals in order to detect anomalies.

KOREA UNIVERSITY - DEPARTMENT OF ENVIRONMENTAL SCIENCE

Jun 2019 - Jun 2020

Undergraduate Intern

📍 Seoul, South Korea

- » Performed chemical and biological experiments to contribute to research projects aimed at studying nitrogen concentrations in various types of soil under vacuum conditions.

»»» PUBLICATIONS AND MANUSCRIPTS

Chica, E., Jang, H., Kwon, Y., Kim, Y., Lee, Y., Lee, M. & Lee, H. J. (2025), *Millifluidic TriMEA organoid platform with stretchable microelectrode arrays for multi organoid evaluation*, In Preparation.

Kim, Y., Chica-Carrillo, E. C. & Lee, H. J. (2024), *Microfabricated sensors for non-invasive, real-time monitoring of organoids*, Micro and Nano Syst Lett, vol. 12, no. 1, p. 26. [doi: 10.1186/s40486-024-00216-y](https://doi.org/10.1186/s40486-024-00216-y).

»»» POSTER PRESENTATIONS

Chica, E., Jang, H., Kwon, Y., Kim, Y., Lee, Y., Lee, M. & Lee, H. *Millifluidic triMEA organoid platform with stretchable microelectrode arrays for multi organoid evaluation*. Poster presentation at the Society of Micro and Nano Systems 2025 MNS Fall Conference, Yeosu, South Korea, Nov. 19, 2025.

»»» TEACHING EXPERIENCE

KAIST - SCHOOL OF DIGITAL HUMANITIES AND SOCIAL SCIENCES

Feb 2024 - Aug 2025

Teaching Assistant: *Scientific Writing*

📍 Daejeon, South Korea

- › Reviewed, graded, and provided detailed feedback on academic writing submitted by students prior to journal submission for improvement.
- › Collaborated with the professor in charge to plan course activities, organization, assessments, and evaluation criteria.
- › Monitored and managed online course content, discussion boards, and gradebook on the university's learning management platform.

KAIST - ENGLISH AS A FOREIGN LANGUAGE PROGRAM

Aug 2024 - Jun 2025

Academic Tutor

📍 Daejeon, South Korea

- › Provided one-to-one meetings to university students to supplement their classes and work on improving their English writing and speaking skills.

KAIST - SCHOOL OF ELECTRICAL ENGINEERING

Aug 2024 - Dec 2024

Teaching Assistant: *Nanobioelectronics*

📍 Daejeon, South Korea

- › Evaluated homework, presentations, quizzes, examinations, and projects in accordance with grading criteria and guidelines.
- › Provided supplementary material in the form of academic papers on the topics covered in class, such as potentiometric/amperometric sensors, diffusion limits, and microfluidics

KOREA UNIVERSITY - CENTER FOR TEACHING AND LEARNING

Mar 2020 - Jun 2020

Academic Tutor

📍 Seoul, South Korea

- › Tutored the *Calculus with Lab I* course to a group of twelve undergraduate students at Korea University, providing additional support outside of formal teaching assistant roles.
- › Planned tutoring sessions in advance after discussion with the professor in charge of the lecture.

»»» SKILLS

Computational Skills

- › **Simulation & Modeling:** COMSOL Multiphysics, MATLAB, PSpice
- › **Programming:** Python (NumPy, Pandas, Matplotlib, PyTorch, Scikit-learn), R, LaTeX, Arduino
- › **Design & Layout:** L-Edit (Layout Editor for MEMS Design), AutoCAD, KiCad EDA
- › **Graphic Design & Visualization:** Adobe Illustrator, BioRender, Blender, 3DS Max

Laboratory Skills

- › **MEMS Fabrication:**
 - › Photolithography: Mask Aligners, Spin Coaters, UV Exposure Systems, Developing Techniques
 - › Reactive Ion Etching (RIE), Electron Beam/Thermal Evaporators, Stylus Profilers
- › **Imaging Techniques:** Bright-field Microscopy, Confocal Microscopy, Image Analysis Software (Fiji)
- › **Electrochemical Tools:** Potentiostat Systems (Cyclic Voltammetry, Electrochemical Impedance)
- › **Biological Techniques:** Organoid Culture, Hydrogel Embedding, Immunostaining, Sterile Techniques

Language Skills

- » **Spanish:** Native Proficiency
- » **English:** Full Professional Proficiency (TOEFL iBT: 113)
- » **Korean:** Intermediate Proficiency (TOPIK: Level 3)