

# KIM, HEE GON

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## RESEARCH INTERESTS

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- III-V semiconductor
- Photonic / electronic devices
- Energy-Efficient photo integrated circuits

## EDUCATION

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### University of Southern California

*M.S, Electrical Engineering*

- GPA of **3.83/4.5** (Dean's List)

**Los Angeles, CA**

Aug. 2022 – present

### Korea University

*B.S, Electrical Engineering*

- *Upper division* GPA of **4.25/4.5** (CGPA of 3.86/4.5)

**Seoul, Korea**

Mar. 2014 – Feb. 2022

## ACADEMIC PAPERS

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- “Efficient spectral sorting of metal film bi-grating device”; 2020; Graduation Thesis; Nanophotonics & Optoelectronics Lab, Korea University, Seoul, Republic of Korea; Advisor: Prof. Kim, Soo Jin
- “Dual-scale Ag fiber electrodes made by Electrospinning for highly efficient and flexible optoelectronic devices”; 2021; Graduation Thesis; Nanosystem & Display Lab. Korea University, Seoul, Republic of Korea; Advisor: Prof. Ju, Byeongkwon

## RESEARCH EXPERIENCE

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### Lab for Photons, Electrons and Materials, University of Southern California

*Graduate Researcher (Advisor : professor Kapadia, Rehan)*

- Led project “Laser assisted high field nanopillar photocathodes fabricated by MAC etching”; Measured experimental results; Analyzed with FEMM and FDTD and introduced analytical & numerical modeling out of it.
- Assisted project “High Brightness Electronically Tunable Negative Electron Affinity Cathodes for Accelerator applications”; Contributed to emission measurement set up & fabrication for HELAC devices.
- Directly grew single crystalline III-V materials on top of amorphous and crystalline substrates using TLP(templated liquid phase) method.

**Los Angeles, CA**

Aug. 2022 – present

### Nanosystem and Display Laboratory, Korea University

*Intern (Undergraduate Researcher)*

- Improved conductivity, transparency using dual-scale Ag fiber electrodes and electrospinning skill
- Participated in projects on fabricating and analyzing electrical efficiency of electrodes

**Seoul, Korea**

Jun. 2020 – Dec 2020

## WORK EXPERIENCE

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### HANDS (Hardware and Software), Major Association, Korea University

*Associate Member*

- Participated in projects using Python & TCAD

**Seoul, Korea**

Mar. 2018 – Aug. 2018

### Sergeant, Republic of Korea Army

*Auxiliary police*

- Served in the 42nd company as K201 grenade launcher rifleman; Counter Terrorist

**Seoul, Korea**

Aug. 2017 – May 2019

## PROJECTS

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- Outlined Fast Fourier Transform using MATLAB code: Achieved unique code featuring faster computing speed than Recursive Function code and class average using characteristics of MATLAB
- Designed & Layout Speaker Driver Circuit including Low Pass Filter using PADS tool; amplifying the input sounds and filtering out the noise above 10 KHz frequency: Simulation by soldering, the output noise was well filtered without any noise
- Planned Dijkstra Algorithm using C++ code: Simulated Heap tree, Percolateup, Deletemin using Hashing and Pointer
- Drafted two different gate length (280nm, 240nm) MOSFETs using TCAD tool; analyzed the device performances and parameters ( $V_{th}$ ,  $I_{sat}$ , and DIBL): Studied and simulated semiconductor process
- Constructed efficient subwavelength photon sorting device using FDTD tool; analyzed its absorption peak, E-field and reflection rate followed by wavelength: Simulated 30nm apart metal film bi-grate device and certified its efficient photon sorting at visible light wavelength.

## **EXTRA-CURRICULAR ACTIVITIES**

**KGSA, University of Southern California**

**Los Angeles, CA**

*Associate Member*

**Ski Association, FLIP, Korea University**

**Seoul, Korea**

*Executive Chairman & Member*

**Leader of Strategy Team, Festival Committee, Korea University**

**Seoul, Korea**

*Executive Chairman*

May 2017

## **HONORS & AWARDS**

- Awards by Department of Energy's Office of Science as a project participant Jun. 2023
- Dean's List on 2<sup>nd</sup> Semester of 2020 with GPA 4.5/4.5, Korea University May 2021
- Semester High Honors at School of Engineering, Korea University  
: 2021(1st Semester), 2020 (1st, 2nd Semester)
- Academic Excellence Scholarship, Korea University Dec. 2021
- Award certificate, Center for Teaching and Learning, Korea University  
: Nominated as a highly performed tutor in CTL
- Korea University Family Scholarship, Korea University May 2020
- Award Certificate, The 4th Seoul Metropolitan Police Agency, Seoul, Korea Oct. 2018  
: Contributing to the development of police administration.
- Participation Certificate, The PyeongChang Organizing Committee Feb. 2018  
: Awarded for contribution to the success of the XXIII Olympic Winter Games PyeongChang

## **TEACHING & VOLUNTEER EXPERIENCES**

- Mentor of Viterbi Graduate Mentorship Program, University of Southern California Aug. 2023 – present
- Volunteer Tutor, Social Service Org. Korea University Sep. 2020 – Dec. 2021  
: Taught Calculus with Lab 1 for undergraduate students  
: Instructed Investment Economic Analysis for foreign students

## **SKILLS**

- Laboratory Tools : CVD growth, Danton/ Torr evaporator, Keithley 237, Ba1500a, High voltage source
- Simulation Designing Software: Silvaco-TCAD, FDTD, FEMM
- Programming Languages: MATLAB, Python, C, C++
- Circuit Design Software: Cadence CAD tool - PSPICE, PADS