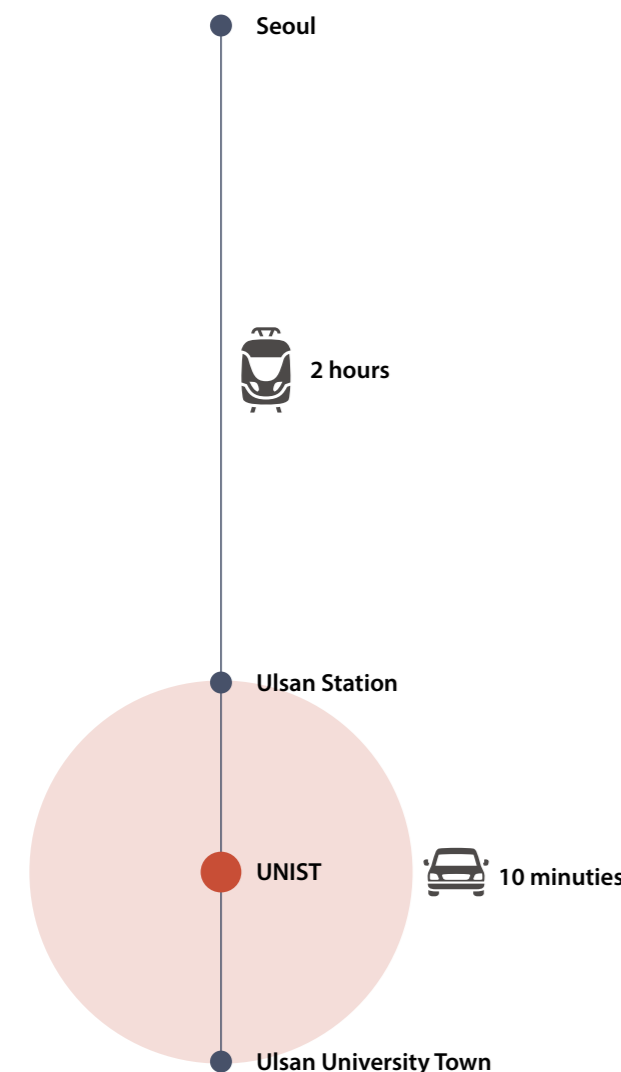




UNIST

School of Energy and Chemical Engineering



Student activities in School of Energy and Chemical Engineering



MT With Us-
Field trip with Us



Energy and Chemical
Engineers
Night-Engineers'

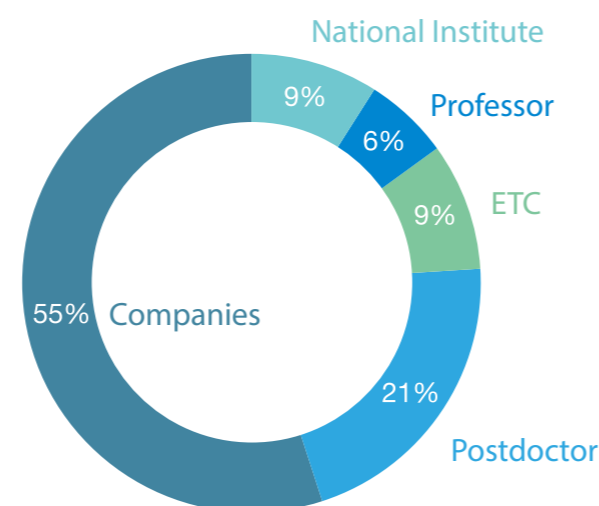


Snack event
for undergraduates of
School of Energy and
Chemical Engineering



Job fair
for energy and chemical
engineering

Current status of Energy Chemical Engineering graduates



Top 5 Korean companies	Top 5 Postdoctoral Research Fellowships Overseas	Top 5 Government-Funded Research Institutions
Samsung SDI	MIT	Korea Institute of Energy Research
LG Energy solution	Stanford University	National Defense Research Institute
SK-on	North Carolina State Univ.	Korea Research Institute of Chemical Technology (KRICT)
LG Chem	Dartmouth College	Korea Electric Power Research Institute (KEPRI)
Samsung Electronics	University of Chicago	Korea Atomic Energy Research Institute (KAERI)

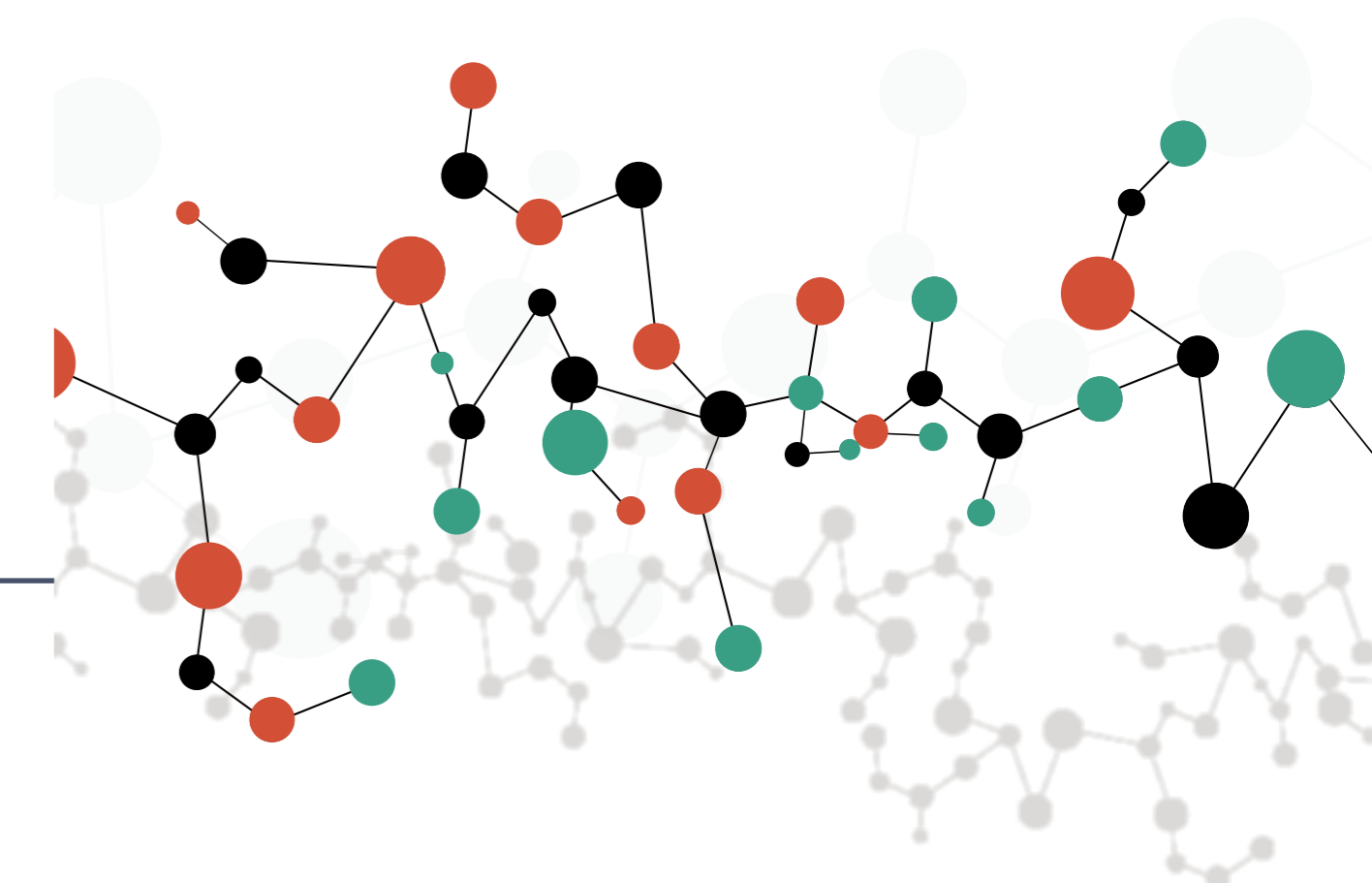
Graduate Scholarship System

- Government Scholarship**
- Full tuition coverage throughout the academic period, along with monthly stipends provided by the government (scholarships for cost of living: KRW 240,000 per month for master's level students, and KRW 395,000 per month for doctoral level students)
 - The minimum stipend amount guaranteed (KRW 800,000 per month for master's students and KRW 1.1 million per month for doctoral students)
 - Stipend is the amount including scholarships for cost of living, and the difference is paid as research expenses
 - The minimum amount may vary depending on participation in research activities
- UNIST Scholarship**
- All tuition fees are covered by the laboratory during the academic term
 - The minimum stipend amount guaranteed (KRW 800,000 per month for master's students and KRW 1.1 million per month for doctoral students)
 - The minimum amount may vary depending on participation in research activities
- Industry-academic/ other Scholarship**
- Tuition and scholarships are sponsored by companies or research institutes (available via employee application and admission)
 - If you enroll in school via special screenings of SK On/POSCO Chem (POSCO Future M)/ Samsung SDI, the relevant company will handle the application process
 - Applicants for special admission to SK on/POSCO Chem (POSCO Future M)/Samsung SDI are required to undergo corporate recruitment processes (document submission, interviews, personality assessments, etc.) simultaneously with the UNIST admission process

During the admission process, evaluation and acceptance/rejection will be determined based on the same criteria without differentiation between national expenditure, UNIST, and general industry-academia scholarship students

Special Admissions with UNIST – ECHE – BST

	POSCO Chm (POSCO Futre M)	SK-on	Samsung SDI
Process	Master's and Integrated Master's-Doctoral Programs	Master's Programs	Master's Programs (Energy Chemical Engineering, Mechanical Engineering, Electrical and Electronic Engineering)
Evaluation Process	UNIST Admission Screening & Corporate Recruitment Screening	UNIST Admission Screening & Corporate Recruitment Screening	UNIST Admission Screening & Corporate Recruitment Screening
Tuition and Scholarship	Full tuition coverage and annual scholarship differential support (ranging from KRW 1 million to KRW 2 million per month)	Full tuition support for 2 years, along with a monthly scholarship of KRW 1.2 million for 2 years	Full tuition support for 2 years, along with a monthly scholarship of KRW 1.25 million for 2 years
Mandatory Service Duration	Twice the duration of the beneficiary period	4 years	4 years



Greetings from the Head of School of Energy and Chemical Engineering

“Energy and Chemical Engineering, A rational evolution of chemical engineering.”

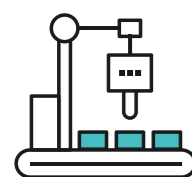
Humanities discuss humans and society, natural science meets divine providence, and engineering touches the power of nature. Humans have expanded their ego in ways such as understanding the self through the humanities, understanding nature through science, and increasing productivity through technologies. With the motto of “Research-driven Sustainability for Global Sustainability,” our faculty of the School of Energy and Chemical Engineering is composed of experts with a wide spectrum of disciplines including chemical engineering, materials science and engineering, chemistry, and physics. This heterogeneous organization, characterized by diversity, is also our effort for the advancement of chemical engineering to practically solve problems of human society.

Chemical engineering has evolved, is evolving, and will evolve for real values.

Hyun-Kon Song
Head, School of Energy and Chemical Engineering

The sustainability of energy chemical engineering and its global impact

State-of-the-art technology
poised to propel the advancement of modern society



Production technology
committed to enhancing the quality of human life without compromise



Carbon-neutral technology
focused to remedying the environmental aftermath on Earth



Energy technology
focused to ensuring the sustainability of humanity's future



The current status of the Department of Energy and Chemical Engineering

The current status of the Department of Energy and Chemical Engineering

School of Energy and Chemical Engineering is dedicated to nurturing energy chemical engineers with specialized expertise and advancing multidisciplinary knowledge applicable to energy, materials, properties, and processes. This is achieved via machine learning-related case studies and deep learning methodologies, addressing the demands of the Fourth Industrial Revolution.



268

undergraduates



347

graduate students



33

full-time faculty members



29

part-time faculty members

(As of January 1st, 2024)

The current status of the graduate program in Energy and Chemical Engineering

The current status of full-time faculty labs

Division	Energy Engineering	Battery Science and Technology	Chemical Engineering	Total
Number of full-time faculty (Labs)	10	8	15	33

The number of enrolled students categorized by course and screening is as follows:

Division	Master's degree programs	Integrated Master's and Doctoral degree programs	Doctoral degree programs	total
Government Scholarship	36	222	48	306
UNIST Scholarship	2	0	1	3
Industry-Academia Scholarship	29	5	4	38
Total	67	227	53	347

(As of January 1st, 2024)

The research field within School of Energy and Chemical Engineering



Solar Cell

#Renewable Energy Sources
#Novel Materials
#Cutting Edge Engineering
#World Leading Efficiency #Perovskite
#Quantum Dot Solar Cells



Batteries

#Computational Modeling
#LithiumIonBattery #Cell #Module
#Pack Design #Advanced Analysis
#SodiumIonBattery #Seawater Battery
#Metal-AirBattery #SolidStateBattery



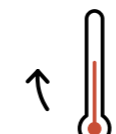
Hydrogen

#Clean Energy Sources #NetZero
#Clean Hydrogen
#Electrochemical And High-Temperature Catalysis #Ammonia
#Liquid Organic Hydrogen Carrier



Catalyst/Chemical Reaction Engineering

#Catalyst Development #Heterogeneous
#Homogeneous #Photoelectrochemical
#Electrochemical And Photoelectrocatalysis
#Reactor Design And Engineering
#Synergistic Collaboration



Thermodynamics/Transport Phenomena

#Multiscale Simulation Methodology
#Thermodynamic/
StatisticalMechanicalApproaches
#Structure-Property-Processing Relationships



Process Design/Analysis

#Chemical Process Analysis
#Optimal Design #Process Control
#Separation Processes #Scale-up
#Computational Fluid Dynamics
#Economic Analysis #Modular Design



Polymer/Organic Synthesis

#Electronic Skin
#Holographic Display
#Carbon-Based Materials
#Biomimetic Functional Surfaces
#Smart Nano-composite Materials



Biochemical Engineering

#Metabolic engineering
#Protein/enzyme engineering
#Systems biology #Synthetic biology
#AI-based engineering biology
#Biochemicals #Bioplastics #Biofuels



Computational Science

#Numerical Methods #Catalysis
#Computer Modeling #Solar Cells
#Understanding Complex Systems And Phenomena #Secondary Batteries
#Chemical Processes



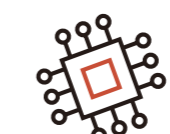
Electrochemistry/Photochemistry

#Clean Renewable Energy
#Efficient Conversion Storage Utilization
#Artificial Photosynthesis
#Secondary Batteries And Capacitors
#Water Electrolysis
#Carbon Dioxide Utilization
#Ammonia Synthesis



Smart Material/Sensor

#Electronic Materials Development
#Stimuli-Responsive Smart Materials
#Multifunctional Materials
#Flexible/ElasticSensors
#Electronic Skin



Semiconductor

#Fourth Industrial Revolution Key Materials
#Internet of Things
#Artificial Intelligence
#Autonomous Driving
#Ultra-High-Density Semiconductors
#Ultra-Low-Power #Distributed Logic
#Next-Generation Semiconductors

Achievements within School of Energy and Chemical Engineering

Accomplishments of a Paper

2021-2023			
The Total Number of Papers	The number of papers per full-time faculty member	The number of citations per paper	The proportion of SCI papers
822 Papers	25.4 Papers	22.8 Times	96.4 %

Entrepreneurship (As of January 1st, 2024)

start-up companies	Investment attraction of	in sales	employees
11	KRW 131.8 billion	KRW 1.4 billion	101

Research expenses (2021 through 2023)

Total KRW 38.4 billion in 2023
Total KRW 36.9 billion in 2022
Total KRW 28.8 billion in 2021

Patent (2021-2023)



411
patent applications



262
registered cases