

Korea-EU Horizon Europe Researchers Networking Forum on Energy & Advanced Mobility

Dongkyu Kim

**Associated
professor**

**Chung-Ang
University**

**Battery | Hydrogen |
Heat pump**



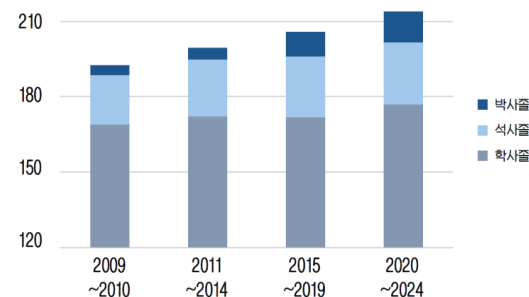
1. Chung-Ang University, Mechanical engineering

We, CAU, have a 100-year history, and have made the outcome of 300,000 alumni, consisting of 15 undergraduate colleges and 18 graduate schools.

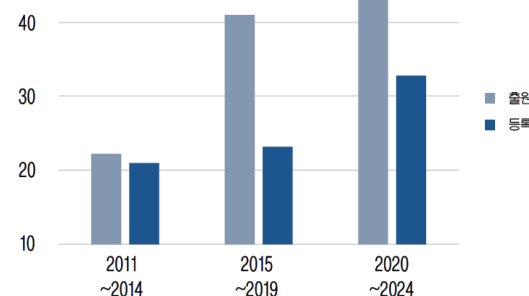
The department of mechanical engineering in Chung-Ang University is consisted of approximately 700 undergraduate students, 100 graduate students, and 26 full-time professors.



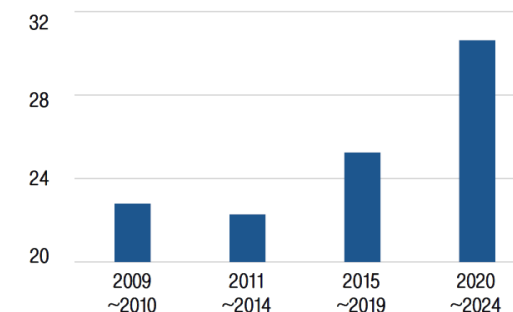
The research cluster for science and engineering



Number of graduates



Number of patents



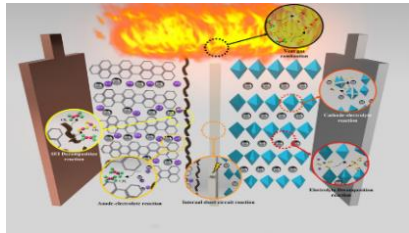
Number of SCI papers

학과	연구비 수주 액(억원)	과제 수(건)
전자전기	524	464
기계공학	386	387
융합공학	277	280
소프트웨어	249	227
에너지시스템공학	236	258
화학공학	99	116
AI	43	91

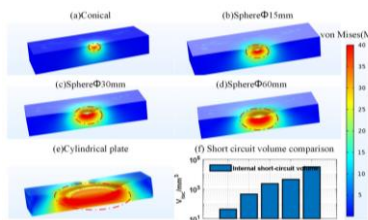
Research funds

2. Expertise: Battery | Electrochemical compressor

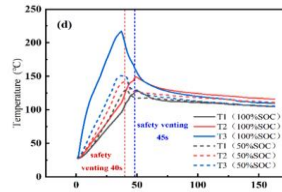
Thermal runaway of batteries



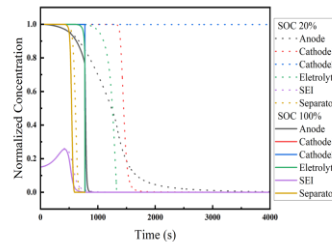
Mechanism of TR



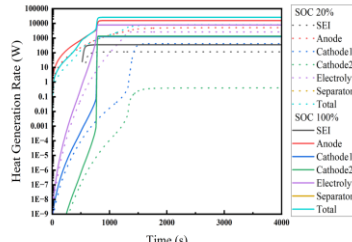
TR by mechanical abuse



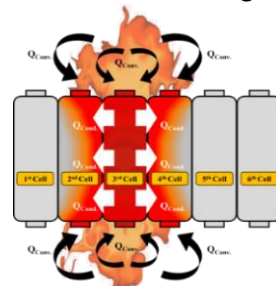
Temperature change



Concentration change



HRR change

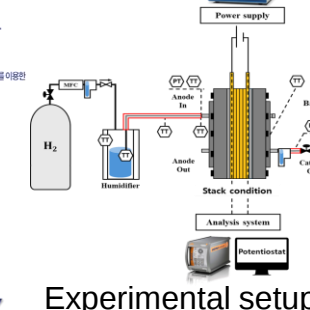
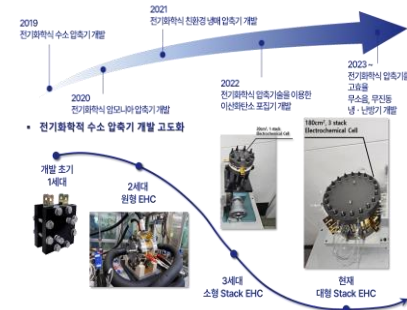
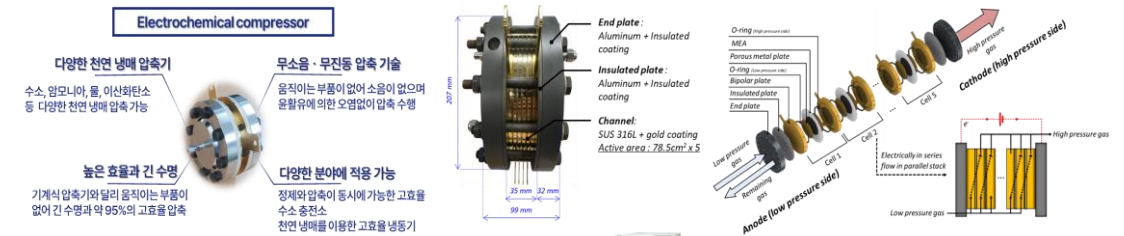


Heat propagation



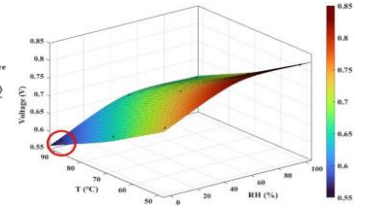
Experiment

Electrochemical compressor

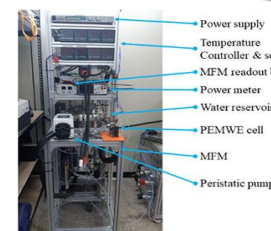


Experimental setup

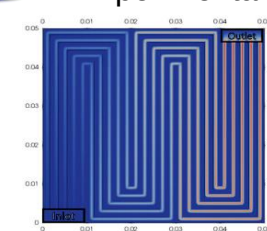
Compressor stack



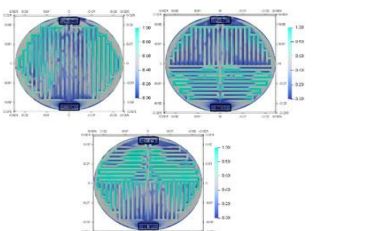
Degradation analysis



High capacity

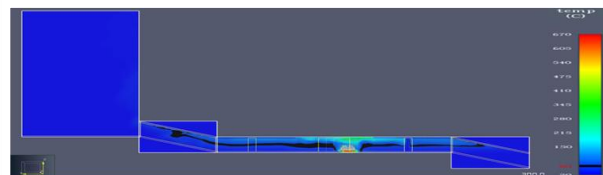
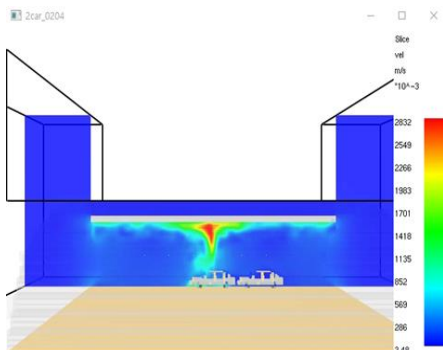
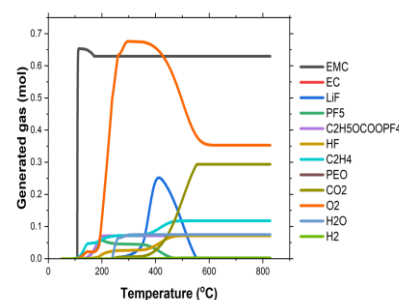
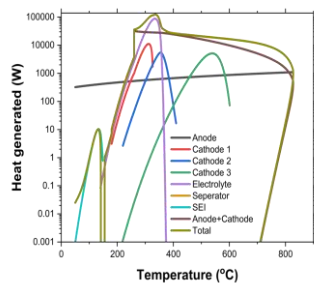
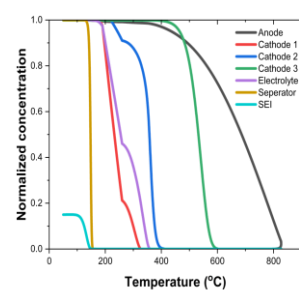
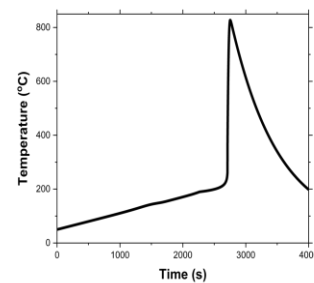
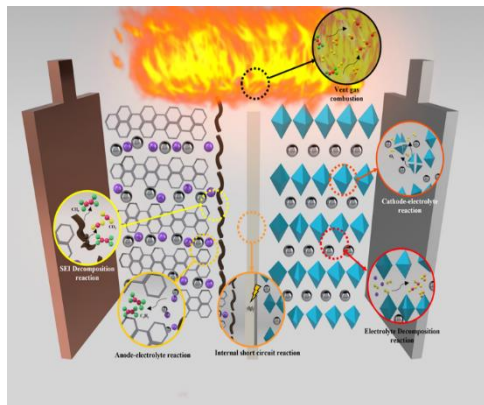


CFD analysis

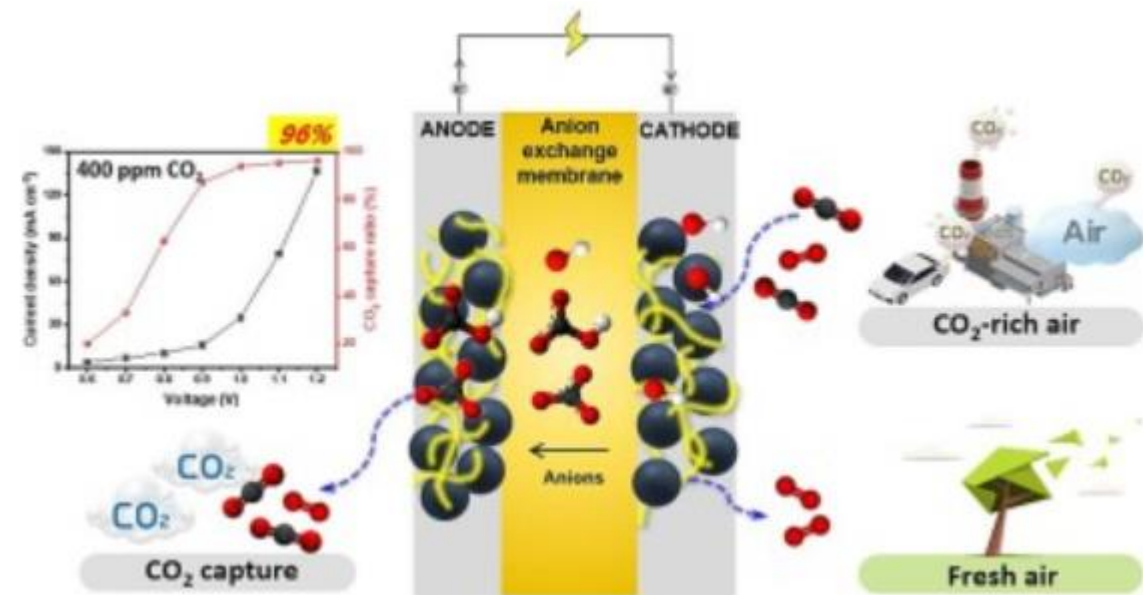


3. Project idea: EV fire prevention | Direct air capture

Targeted call: HORIZON-CL5-2027-03-D5-06: Fire prevention and mitigation for EVs in confined areas (2ZERO Partnership)
Main objectives: Virtual sensor for on-board fire detection



Targeted call: HORIZON-CL5-2027-02-D3-31: Advancements in Direct Air Capture
Main objectives: Electrochemical CO₂ separation cell for direct air capture





4. Profile You are Seeking and Why

We are developing a project on safety based on ionic transport and thermal management.

We are looking for partners specializing in:

- Industrial partners capable of providing battery module testing or prototype demonstration
- Partners who are interested in battery fire suppression and safety technology

Our research group focuses on the integration of electrochemistry and mechanical engineering.

- Research teams working on electrochemical cells, battery safety, or energy storage modeling,
- Industrial or academic partners developing EV or stationary energy systems,
- Organizations interested in AI-based thermal and safety control technologies.



5. Contact Details

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