Korea-EU Horizon Europe Researchers Networking Forum

on Energy & Advanced Mobility

- **Prof. Soo Young Kim**

- **Position: Professor**
- **Korea University, Republic of Korea**
- **Research Area: Catalysts**

1. Short Introduction of your Organization

Korea University

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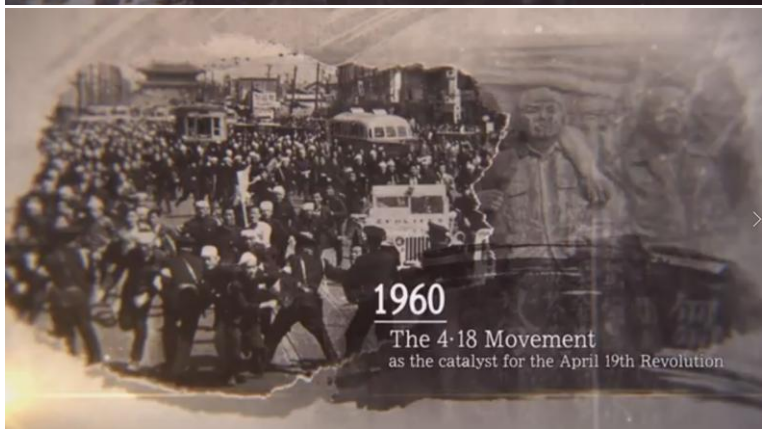
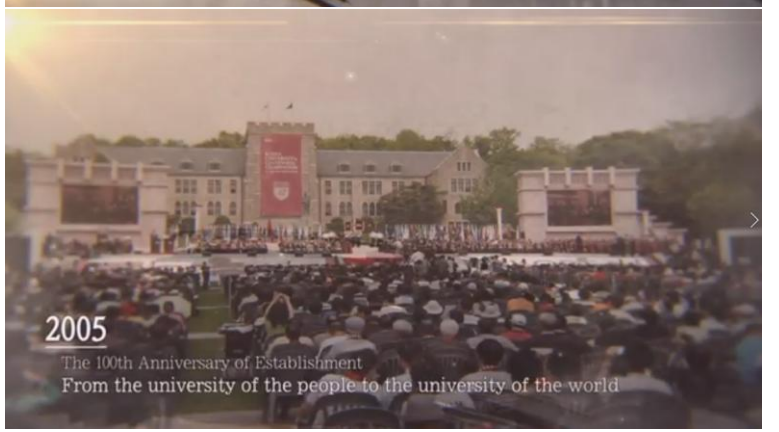
Brief History





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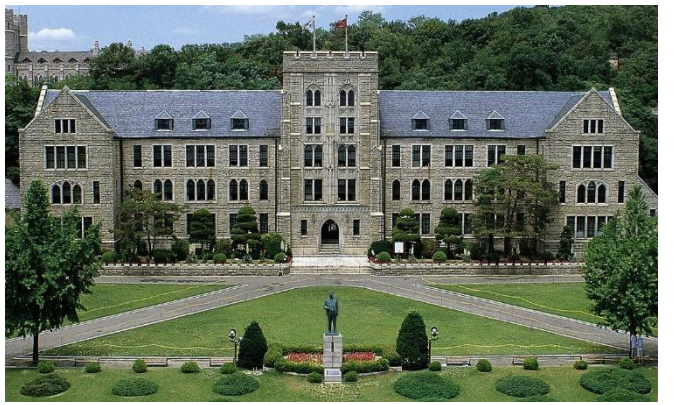
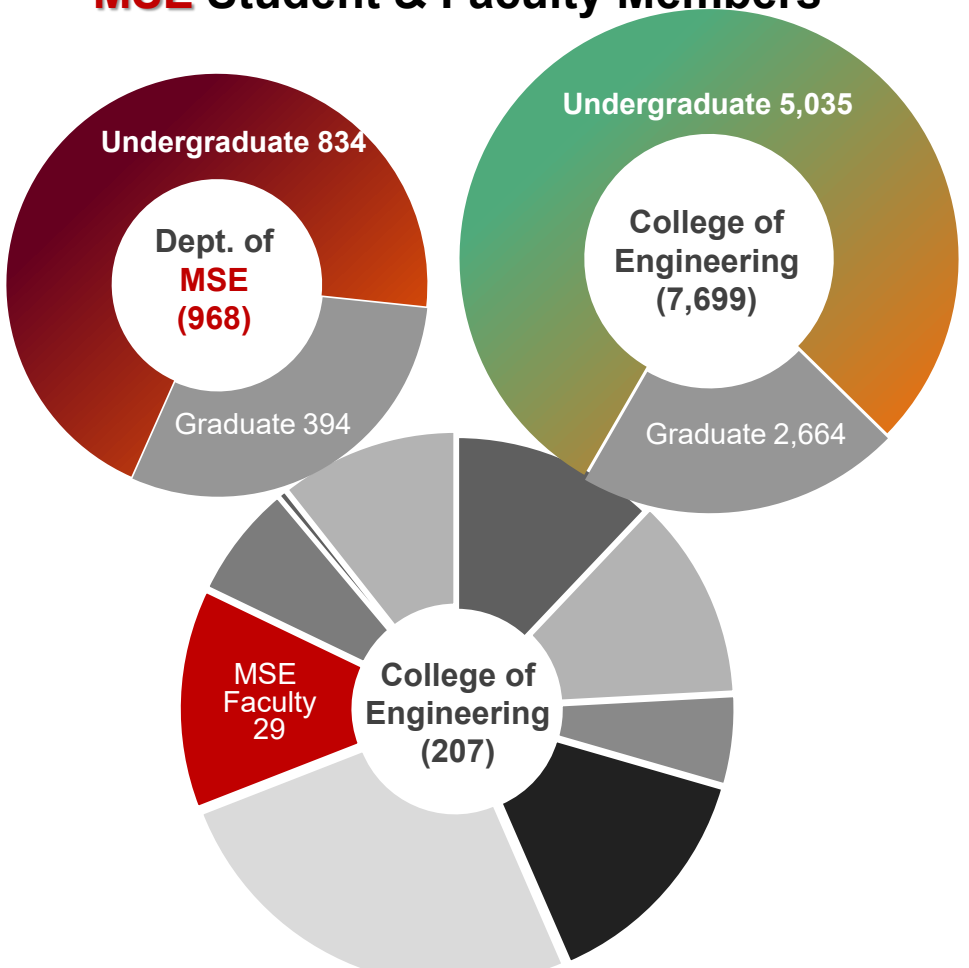


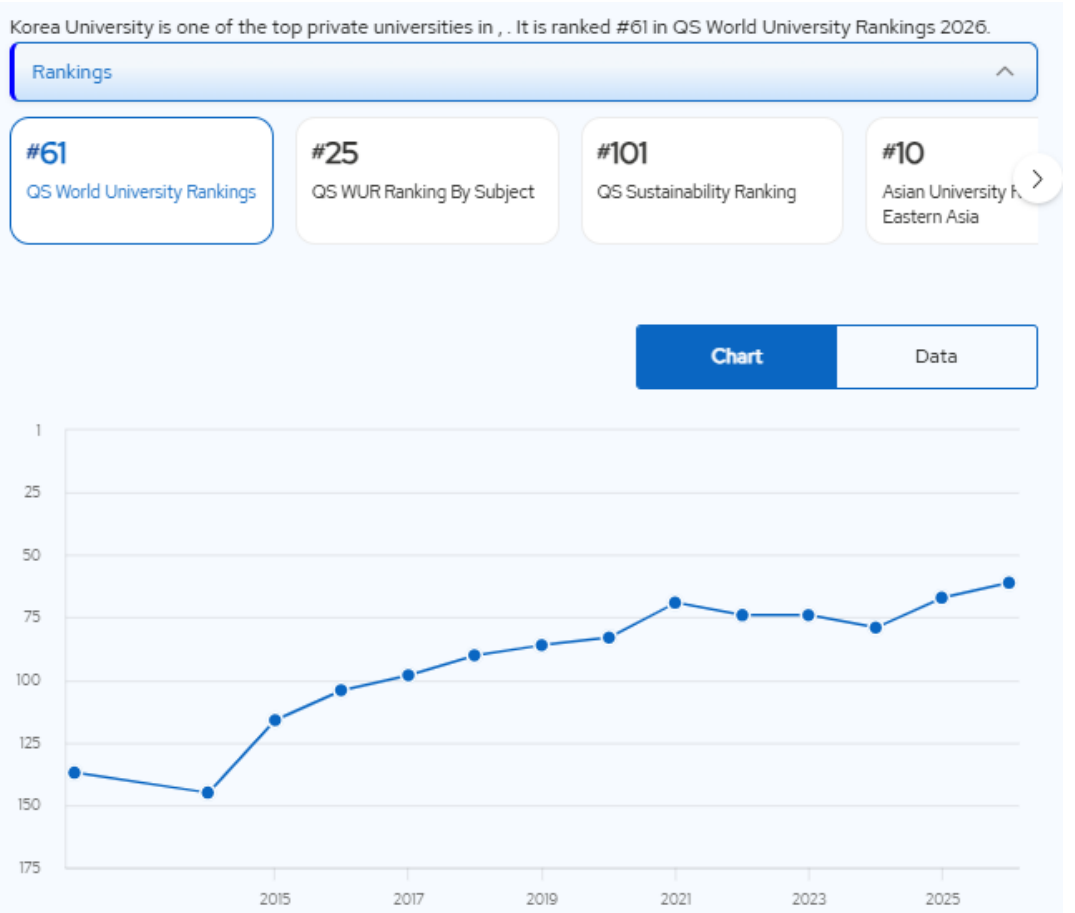
- Approximately 280,000 alumni including a former president, the current Major of Seoul, Sports Stars, Researchers, etc.
- Korea University has produced the greatest number of CEOs of the Korean Fortune 500 companies.

1. Short Introduction of your Organization

MSE Student & Faculty Members

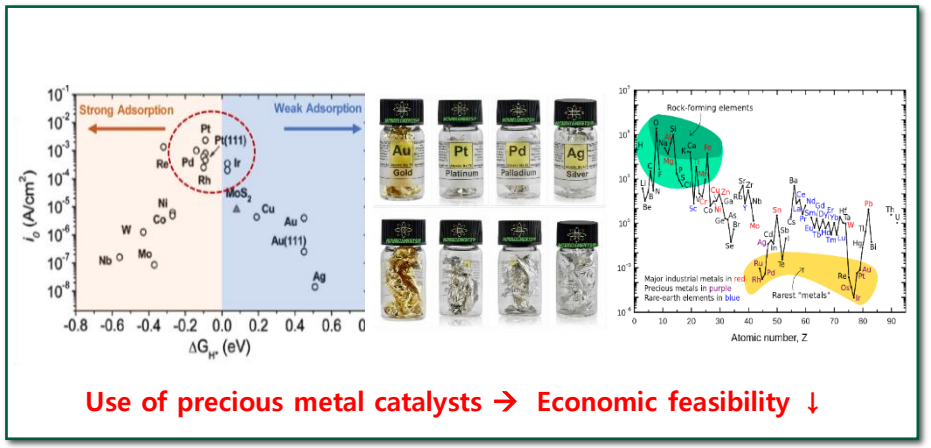


QS ranking of Korea University

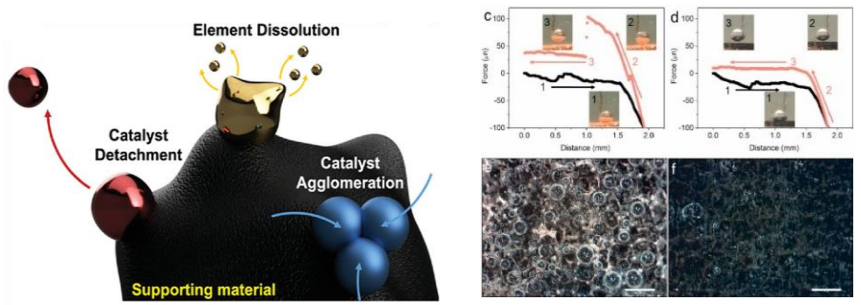


2. Expertise

Keywords: Catalysts, Hydrogen evolution, CO_2 reduction

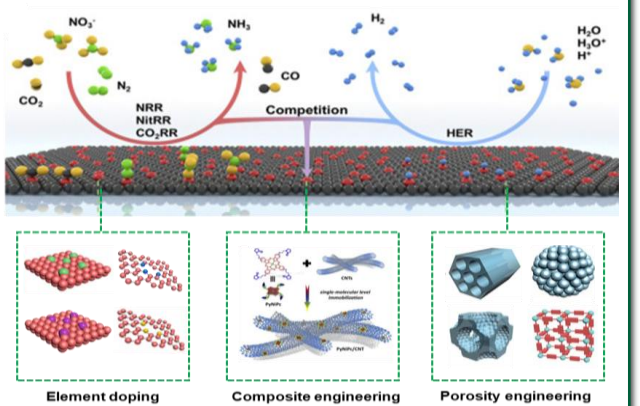


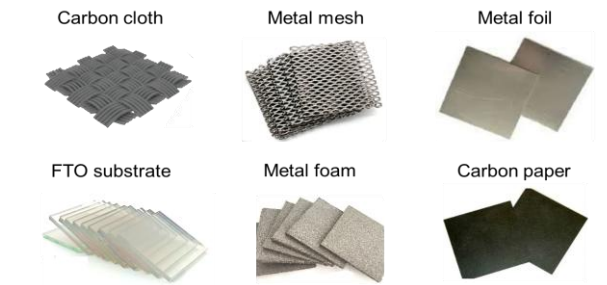
Use of precious metal catalysts → Economic feasibility ↓



Difficulty in catalyst detachment and gas bubble release

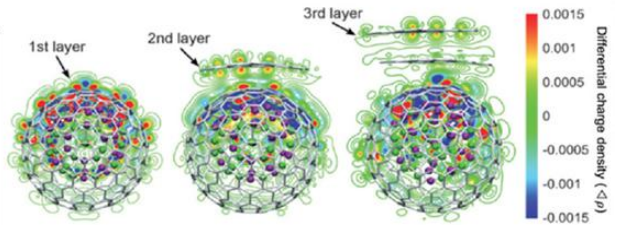
Surface modification technology → Control of surface composition, morphology, crystal phase, and chemical state of materials



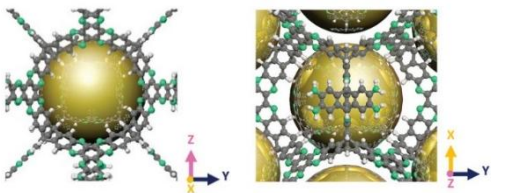


Selection of appropriate electrodes and structures

electrode substrates with non-precious materials



Control of shell thickness

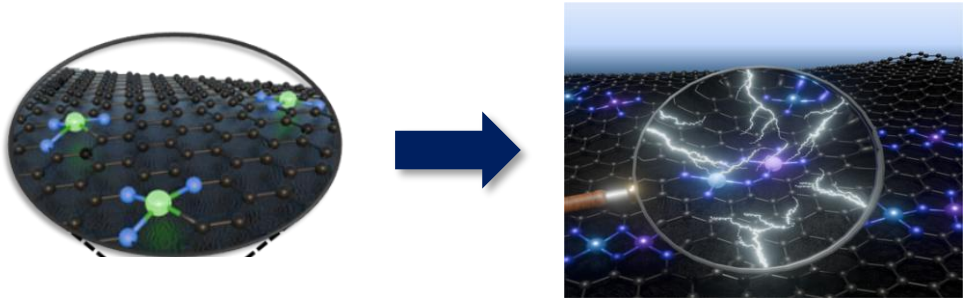


3D networking shell formation

3. Your Project Idea

Targeted Call

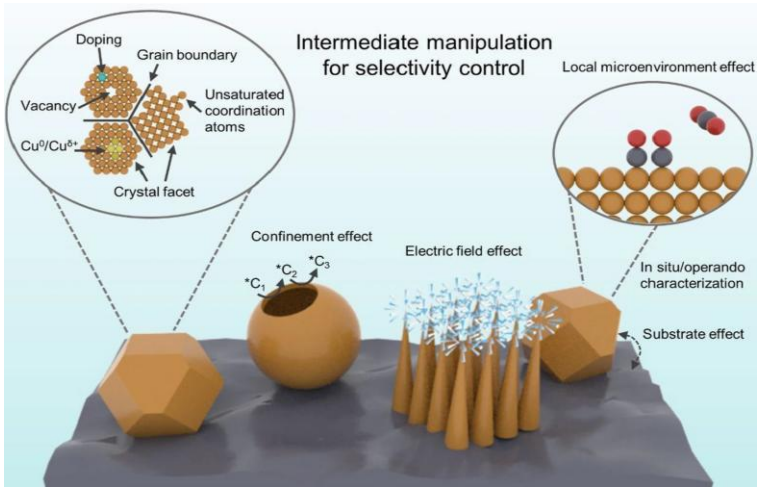
: Horizon Europe Cluster 5 – Next generation of renewable energy technologies (HORIZON-CL5-2026-04-Two-Stage-D3-02)



Single atom catalyst to dual atom catalyst

Main Objectives

- Advance catalyst design: **Single-atom** → **Dual-atom** architectures for high-efficiency CO_2-to-CO
- Develop nanostructured catalysts: Enable selective **C–C coupling toward C_{2+} products** (ethylene, ethanol)
- Scale-up electrolysis systems: From H-cell to flow-cell & membrane electrolyzers



Nanostructured electrocatalysts for C_{2+} products

Idea

- **CO_2-to-CO**: Progressing from single-atom to dual-atom catalysts, refining active site control
- **CO_2-to-C_{2+}**: Employing nanoscale engineering to create favorable catalytic environments for C–C coupling

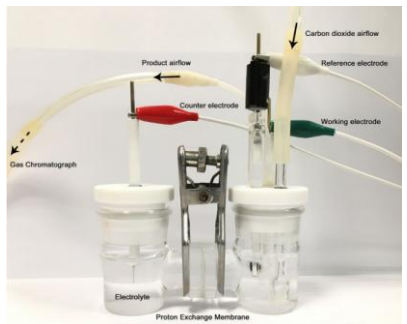
4. Profile You are Seeking and Why

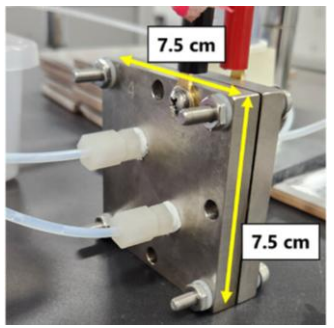
We are seeking collaboration with researchers and institutions that have expertise in the **scale-up of electrochemical systems** and the **design of industrial-level reactor platforms**.

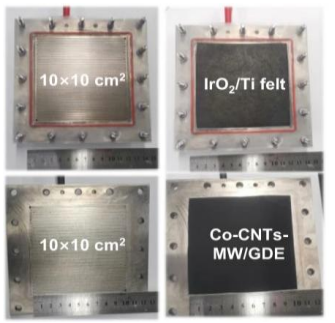
Ideal partners would bring:

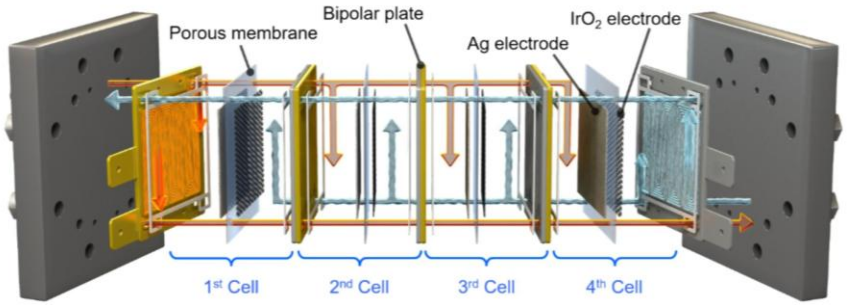
- Experience in **electrolysis scale-up up to pilot or kW-scale** systems,
- Proven ability to coordinate multi-partner collaborations involving academia and industry.

By combining such expertise with our strengths in catalyst design and mechanistic understanding, we aim to bridge the gap between fundamental research and industrial deployment, ultimately accelerating the development of sustainable and scalable CO_2 utilization technologies.









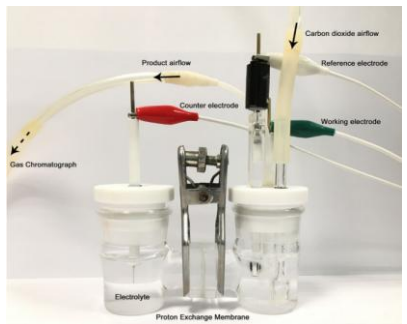
4. Profile You are Seeking and Why

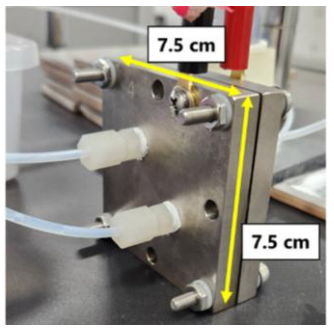
We seek collaboration with researchers/institutions that can offer: **Electrolysis scale-up expertise** (pilot or kW-scale systems)

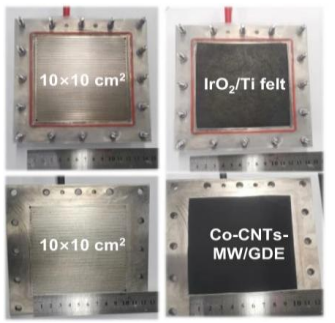
- **Experience in multi-partner coordination** (academia + industry)

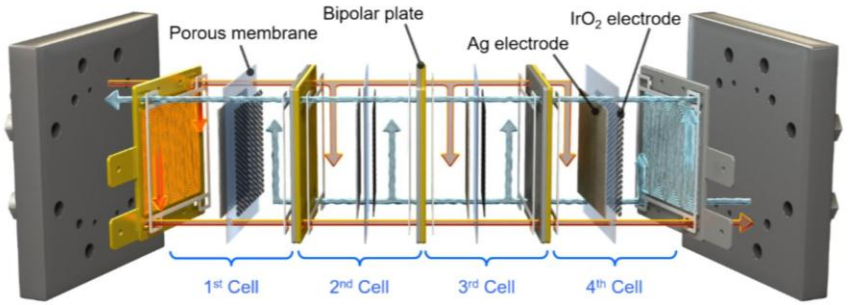
Goal:

- Combine your **scale-up** & coordination strengths with our **catalyst design** & mechanistic expertise
- **Bridge fundamental research and industrial deployment**
- Accelerate development of sustainable, scalable CO_2 utilization technologies









5. Contact Details

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