

Theme : Environmental Technology for Sustainability

- Sub Theme : Carbon capture and utilization

As of this year 2021, the Paris climate change accord started to respond to global climate change and carbon neutral in the world. Carbon capture, use and storage will play an important role, as the goals of various reports on global warming demonstrate strong demands in reducing the global temperatures within 1.5 °C compared to those before the Industrial Revolution. For this, we need substantial and practical change of the way and technology about the global challenge. For carbon capture, a new effective concept of CO₂ capturing technology with high capacity and rational regeneration with low energy penalty would be needed to develop. For carbon utilization, a new concept of materials development, low energy demanding systems, and their combination is necessary to improve the performance of conversion to alternative fuels and chemicals.

We are aiming to find new materials and processes for effective and low energy demanding CO₂ capturing and conversion in the CCU technology.

The topics we pursue through this GRO are as follows:

- A new material and technology for capturing CO₂
- A new liquefying and solidifying process development with low energy penalty to recycle CO₂ captured
- A new material and technology for effective conversion of CO₂ to X, alternative fuels and chemicals such as CH₄ etc.
- A new technology for negative emission for carbon neutral

※ The topics are not limited to the above examples and the participants are encouraged to propose original idea.

※ Funding : Up to USD \$150,000 per year